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WHAT THE BAKER CAN GET OUT OF A BARREL OF FLOUR.

THE average price of regular wheat, says the Chicago Tribune, known in Board of Trade parlance as "No. 2 spring," for the year 1883 was \$1.01 $\frac{3}{4}$ per bushel. The average price for the last eighteen years ending Dec. 31, 1883, was \$1.04 $\frac{1}{2}$. The average price for the last two months has been about 75 cents.

With these figures in hand, the Tribune set about solving the question. How much has this reduction of over 25 per cent. in wheat benefitted the consumer? Is a loaf of bread any bigger, or any better, or any cheaper than it was a year ago? The answer is not wholly satisfactory. In some cases the consumers have been given the full value of the reduction; in others the bakers have added it to the profits; and in many the surplus has been about equally divided between baker and consumer. It has not been shown that the millers have gained anything by the reduction; if they have it is but a trifle. It takes four and one-half bushels of wheat to make a barrel of flour, and as the offal or bran pays for the barrels and cost of grinding, the difference between the price of the wheat and the flour is clear profit to the miller. The cost of a barrel of flour would therefore be \$3.37 $\frac{1}{2}$ with wheat at 75 cents per bushel. If the wholesale price of this flour is \$4.75 the miller's profit is \$1.37 $\frac{1}{2}$. Of course this is not a net profit, as the value of the miller's invested capital and many incidental expenses are left out of the question. It is claimed on the one hand that the keen competition in the business and the present condition of the trade render the flour-milling business anything but profitable, while on the other hand it is argued that the price of flour is still above its actual proportionate value, and might be sold at a much lower price and still leave a fair profit for the miller.

The wholesale price of "Minnesota straights," or regular bakers' flour, last year was \$5.50 to \$6 per barrel. The present price is \$4.75 to \$5. The "patents," or highest grades of flour, cost last year \$7 to \$7.15. The present price is \$5.75 to \$6. The first-named class is used for making all ordinary bread; the second is used only in extra quality, fancy, or "Eureka" breads.

No matter how flour may fluctuate in price the price of a loaf remains the same. A reduction of \$1 per barrel in flour would make only a reduction of a fraction of a cent in the price of a loaf. Since the present reduction in flour some of the first-class bakeries have added two ounces to the weight of each loaf, some of the bakeries have added one ounce, and some just give the same-sized loaf as before, claiming that the difference is too little to allow of their making any change. A barrel of flour will make 320 thirteen-ounce loaves, 297 fourteen ounce, 277 fifteen-ounce, 260 sixteen-ounce, or 231 eighteen-ounce. A reduction of 60 to 70 cents per barrel will allow the baker to add one ounce to his loaves and still have the same profit. Last year the common bread, retailed at five cents per loaf and sold wholesale at four cents was made in fourteen-ounce loaves at the leading wholesale bakeries. It is now made fourteen, fifteen, and sixteen ounce size, and the consumer can easily test the fairness of his baker by weighing a loaf. Given the weight

of the loaf it is no hard matter to figure up the baker's profit.

The flour is not the only article used that is lower than last year; yeast, for instance, that was 25 cents per pound last year, is now only five cents, and labor, fuel, and other items of expenditure have also been in some degree reduced. The average cost of manufacture, including labor, rent, and everything except flour, might be put down at \$2 per barrel for the wholesale bakeries. With \$5 for flour this will make \$7, which is about the maximum cost for common bread at present. The product will be 260 sixteen-ounce loaves, which, at four cents each, amounts to \$10.40, leaving a handsome profit of \$3.40 per barrel, or nearly 50 per cent. But if the baker makes his dough into fifteen-ounce loaves the returns will be \$11.08 per barrel, and if into fourteen-ounce it will be \$11.88 per barrel, a profit of \$4.88. But to the larger bakeries, using twenty-five to forty barrels of flour daily, the profits are undoubtedly even greater than this. The cost of distribution may be greater, but it is more than counterbalanced by the labor-saving and other advantages incident to extensive manufacture. On the whole, it is not too much to expect and demand that the five-cent loaf of common bread shall at present be of good quality and a full pound in weight.

The superfine bread sold by most of the leading bakeries is made with milk from "patent" flour, and is sold at six and seven cents per loaf. Some of the bakers are now making these loaves eighteen ounces, the former weight being fifteen and sixteen. An eighteen-ounce loaf of the finest flour made with dairy milk is not dear at seven cents to people who can afford it as a luxury, but it is not by any means to be recommended as a substitute for a plain one-pound, five-cent loaf in a laboring man's family, where every cent counts.

Some years ago, when competition in the baking trade was exceedingly keen and when the weight of a loaf was of less consideration than its size, some bakers began making big spongy, soggy loaves from bad flour, whitened with alum and doubly swollen with extra yeast, the bread being of a character that was deleterious to health. The more respectable bakers met this competition by agitating for municipal action on the subject, and eventually a series of ordinances were passed providing that bread should be pure and wholesome and sold only by avoirdupois weight. For a short time the ordinance was obeyed, and the manufacture of the cheap sponge loafs put to an end. Gradually the ordinances, like many others in the municipal code, fell into disuse, and came to be regarded as a dead letter. The "pound" loaf dwindled to 15, 14, 13, and finally to 12 ounces. Its weight was determined solely by the honesty of the baker who made it and the grocer who sold it. But the ordinances, it is alleged, changed the trade considerably by educating the people on the value of bread, so that the trade in the cheaply-made article has been practically killed. The proprietors of the first-class bakeries say they would like to see the ordinance enforced and bread sold by weight only, but they also add that there is but little necessity at present for the law. Probably there is a big trade still done in the light-weight dyspeptic loaf, and it

would be well if householders would clip this article out for reference and see that their grocers give them fair and honest value. That is the only way to bring the bakers to time.

As a fit conclusion to the above we learn from a London letter to the Pittsburg Dispatch: That there is a general outcry in Europe that, while wheat has gone down to the lowest point reached during the present century, bread remains as dear as ever. The bakers and the millers are so far the only men who get the benefits of the bountiful crop. Bread sells in London at about 4 cents a pound, and pays 300 per cent profit to the miller and baker. In some places in the southern part of England the same quality of bread is sold at a little over two cents a pound, and pays a good profit to the producer at that. There is, however, nothing to be astonished at in these extortions of the trade when we take into consideration the fabulous prices which are paid for tea, coffee, sugar and other articles of first necessity at retail, and the unprecedentedly low prices at which they are sold wholesale. Tea, for instance, sells at auction in London at about 20 cents a pound, and can not be bought at retail at less than 65 cents.

FAMINE IN EAST INDIA.

A telegram in English papers dated Bengal, Sept. 28, says: "The famine is reaching serious proportions. Native authorities claim that the government relief system is inadequate to the emergency." It is such items as this, coming with lamentable frequency, says the Globe Democrat, which are among the strongest counts of the indictment against British rule in India. "The Government relief system" may or may not be "inadequate to the emergency;" but how could such an emergency as the present arise in one of the most fertile regions of the world if the Government were what it should be? "Prevention is better than cure," and no relief system can be half so desirable as a system which renders relief unnecessary.

The area of Bengal, exclusive of the native or semi-independent States, is about 240,000 square miles; the population about 36,000,000. This proportion of inhabitants to territory is, of course, very large as compared with America; but certainly not enough to reduce subsistence to the starvation point if the land were properly utilized, and the ordinary principles of political economy embodied in the laws and carried into practice. Yet every few years a famine prevails there which throws famines elsewhere far into the shade. Men, women and children not merely suffer for lack of food, but die; and die not merely by dozens and scores, but by thousands and tens of thousands. Among the poorer classes almost every house has its victims; in not a few cases whole families, and even villages, are swept away by starvation, or diseases incident to scanty supply of the proper kind of life-supporting material.

Unclean animals, roots and weeds, and refuse of every description are eaten, and children are occasionally sacrificed to save the perishing parents. Corpses strew the wayside, and such scenes of misery, despair and death are enacted as no pen can fitly describe, no imagination portray. So common are these

famines that they are annually taken into account, as a disturbing element, by the authorities; and the relief fund always figures in the financial estimates. These conditions seem to be accepted by people and Government as a matter of course; "a dispensation of Providence" as much as pestilence, hurricane or flood.

It may be, as is claimed by English writers, that famines are fewer and less destructive now than when India was under the entire control of native rulers; but this does not answer the charges preferred by those who do not take the dominant English view of the situation; charges which, we may remark, have been abundantly sustained by eminent English testimony. The only shadow of justification for the British Empire in India lies in the assumption that British government is far better for the governed than was the native government. Doubtless it is, from the British standpoint; but the verdict of the natives is practically unanimous in the negative. All competent observers admit that the hatred of British rule is intense and inextinguishable; that those who ought to know best, and do know, from personal experience—the natives themselves—would sweep every vestige of that rule out of sight to-morrow, if they had the power. Nothing but ceaseless vigilance, backed by bayonets, holds India under the English heel; and the vast domain which gives to Victoria the title of "Empress" is simply a powder magazine, that a single spark may at any moment explode.

THE NUTRITIVE VALUE OF CELLULOSE.

During the past twenty years many experiments have been made in experimental stations to determine the nutritive value of the different kinds of feed, and it was well established that many of those portions which have been looked upon as insoluble and indigestible, disappeared in their passage through the digestive tract of the animal. A careful determination of the food, as well as of the excrements, demonstrated the absence of a fair percentage of the woody fiber of the wood.

Woody fiber is the name given to that insoluble part of a plant which remains after a repeated treatment with sulphuric acid and caustic potash. Common hay is especially rich in it, likewise clover and straw. This woody fiber consists of cellulose, (the walls of the cells of the plant) and lignin, which together form the skeleton of the plant, increasing in quantity with age, as testified by the well-known saying that plants become more woody as they grow older.

On comparing the quantity of woody fiber in the food with that found in the excreta, it was discovered that the missing portion of the fiber consisted of cellulose; as a consequence, it was concluded that cellulose was digestible and of the same nutritive value to the animal as starch, which has the same chemical composition.

Various kinds of feed, rich in woody fiber, such as hay and straw, form, so to speak, the foundation, the bulk of the food material given to stock; they contain between 20 and 40 per cent. of it, and it was therefore of the greatest importance to prove that one half of these were digestible.

The latest investigations made, tend to prove that the woody fiber which has such

a strong power of resisting chemical reagents, is disorganized without difficulty by organic ferment inside of the animal body as well as outside, inducing a kind of fermentation which breaks up this woody fiber into gaseous products. Such fermentation process is set up in the digestive tract of the animal, and without really being digested, the woody fiber undergoes various chemical changes. In order to determine whether such a product had any nutritive value to the animal, Prof. Weiske carried out a series of experiments at the experimental station in Breslau, Germany, with the following results. It has been well known that in feeding the stock with food rich in albuminoid substances, such as beans, an excessive interchange of albumen takes place in the body at the expense of the tissues, and larger quantities of the used-up albuminoid substances are excreted by the animal in the urine. If such food, containing too much albumen and too little starch, is mixed with another kind, rich in starch, but poor in albumen, the nutrition assumes a more rational character. Less albuminoid products are excreted and their presence in the urine decreases at the same rate as additional flesh is formed on the animal. If therefore the cellulose is of the same nutritive value as the starch, its action in the animal economy, if combined with food rich in albumen, should be identical.

But from all the carefully conducted experiments, Prof. Weiske concludes that contrary to all theories, cellulose does not possess any value to be compared with that of starch or other soluble carbohydrates in the fattening of animals. The only value ascribed to it consists in the assumption that the fermenting process in the digestive organs of the animal disintegrates the cellulose and sets free any nutritive particle contained within the cells, rendering it accessible to the digestive functions. This, of course, gives a more complete digestion of the food than could have been obtained otherwise, without crediting anything to the cellulose itself.

AN INTERESTING EXHIBIT.

The following communication appeared in the Chicago Times of Saturday last, and is worth reproduction for, and perusal by, our readers. The writer says:

The remarkable depression in the prices of wheat, and the abnormal condition of the trade throughout the world during the past year, have caused much speculation as to whether the change from the old order of things is permanent, or merely temporary; and much advice has been given as to the course to be pursued to restore the remunerative prices of the last ten years. Inasmuch as there has been no recovery from this depression, the data for an accurate decision as to its causes are incomplete, but a few facts may be of value in aiding the farmers of this country to decide whether they will market their wheat at the prevailing low prices, or hold it for a rise. A great number of statements in reference to the matter have been circulated throughout the country—many of them grossly erroneous and misleading. The following are the most plausible, have been most frequently repeated, and have apparently had the most influence:

1. The increase in the wheat production of the world during the last few years has greatly exceeded the increase in population, resulting in overproduction.

2. Our chief market is the United Kingdom, whose sources of supply has been so enlarged of late by the opening up of new fields that, in order to induce her to continue to take out wheat, we must consent to a material reduction in price.

These are the main arguments of the wheat pessimists, who are announcing to the producers and primary holders that it

is useless to expect a permanent reduction from the present depression; that they must part with their holdings at present prices, and adjust themselves to the new order of things by reducing their acreage. The increase in our surplus product for the last twenty years is remarkable, and if the pessimists could maintain the assumption that our market was likely to fail us, the optimists might well be alarmed. The following table (which gives approximate results only in some instances, though based on official figures) shows the increase in population in the United States and in the production and exports of wheat during the nineteen years from 1867 to 1884:

Period	Av. annual production, bu.	Av. annual exp'ts, bu.	Production per capita, bu.	Exports per capita, bu.	Population.
1866-70	216,901,901	35,621,394	6	1	1866-35,700,846
1880-83	460,638,985*157,660,395	8	23%	1884-57,300,000	
Increase 112 per cent.	340 per cent.				60 per cent.

*1879-83.

While these figures show a great increase in production they show a still greater increase per cent. in the demand for the product, and give no cause for apprehension unless that demand is threatened with a serious decrease, as claimed by the bears. The two chief importing nations of the world are the United Kingdom and France. Upon the United Kingdom we are dependent for about two-thirds of the total demand for our surplus. Her chief industry has long since ceased to be agriculture, and her pressure upon the chief food-producing nations for subsistence has been rapidly increasing for many years. Live stock is slowly becoming the paramount interest in agriculture (owing to the decreasing fertility of the soil and the heavy losses occasioned by recent bad seasons), as is shown by the increase in permanent pasture, which has diminished a large breadth of the area devoted to wheat. Mulhall, the eminent English statistician, states the annual consumption, and the proportion of native and imported wheat for a period of 70 years, as follows (bu):

Period.	Total consumption.	British.	Imported.
1811-30	97,000,000	94,000,000	3,000,000
1831-50	118,000,000	102,000,000	16,000,000
1751-60	150,000,000	103,000,000	47,000,000
1861-70	175,000,000	102,000,000	73,000,000
1871-80	191,000,000	77,000,000	114,000,000
1881	207,000,000	72,000,000	135,000,000

The average annual crop was, in round numbers, 80,000,000 bushels from 1878 to 1883, as against 90,000,000 for the previous six years. France in past years was an exporter, but for the last five years her net imports have averaged about 58,000,000 bushels annually, and during the last twelve years her production has decreased slowly. The other principal importing nations of Europe are Belgium, Switzerland, Holland, Italy, Germany, Spain, and Portugal. It is significant that the last four of these seven formerly produced a surplus. Our chief competitors in supplying Europe with bread-stuffs are Russia, Australia, and India. The most formidable at present is Russia, who can, owing to her proximity to the European markets, offer her surplus wheat, if necessary, at prices with which we cannot compete. But the ignorant farmers of Russia are in a condition of poverty and wretchedness under the operation of a system of taxation and extortion by petty officials and usurers, which precludes any material advancement. Her annual outturn during the six years, 1870-75, averaged about 185,000,000 bushels, and was but 191,000,000 during the succeeding six years—a very insignificant increase in twelve years. Russia is evidently withdrawing from direct competition with the United States in the British markets, and finding purchasers elsewhere for her annual surplus of 60,000,000, as is evidenced by the following table (Mulhall's), which gives the ratio of importations of America, Russia, and all other countries to

the total importations into the United Kingdom during the periods named:

	1861-71 per cent.	1871-80 per cent.	1881 per cent.
America.....	30	48	68
Russia.....	26	20	7
All Others.....	44	32	30
Total.....	100	100	100

Australia's production has increased about 50 per cent. in the last ten years, the crop of 1884 being in round numbers 45,000,000 bu, of which, it was claimed, about half would be available for export. But the aggregate production is not large, her location puts her at a great disadvantage in point of carriage, and her unsurpassed advantages as a grazing country make it probable that her greatest development in the future will be in the direction of meat and wool production, with grain of but secondary importance.

Statistics in reference to India's wheat production have never been obtained in some districts, and the figures that have been published on the subject are conceded to be only approximate. Her aggregate crop is estimated to average about 222,000,000 bu. Her export surplus has been very irregular. The annual acreage for the six years 1878 to 1883 was about 16,000,000—an increase of 325 per cent. over the preceding six years. For the last of the former period, however, the average was 25,000,000 and the alarmists claim that she has but just commenced a movement which will eventually drive America from European markets: that the cost of wheat to the producer there is merely nominal as compared with the cost here; that she has "a vast amount of land" adapted to wheat-growing which is either wholly uncultivated, or, if cultivated, has not been brought into communication with the seaboard markets, and that with the extension of the railway facilities contemplated, India will be able to flood the markets of the world with cheap wheat.

It is difficult to arrive at a satisfactory conclusion in reference to the cost of Indian wheat laid down in European markets. Mr. J. F. Fuller, assistant director of agriculture and commerce for the northeast provinces and Oudh (which furnish about one-third of the entire outturn) estimates the cost in first hands at about 45c a bu. In a document recently issued by the Indian government, an expert's calculation is reported to be 36c. A report prepared by the director of the department of agriculture of the same provinces gives the average price of wheat at Cawnpore, one of the chief interior markets, located in the center of the wheat-producing region, about nine hundred miles from the seaboard, for the crop years 1881 and 1882 at 60a.61½c respectively. Dr. W. W. Hunter, secretary of statistics in India, says that at about 50c the ryot would realize a profit and that at about 56c the area of cultivation would be largely extended, but that to pay the latter figure the price in England must be about \$1.32 per bu.

Mr. J. K. Cross, political secretary of the India office, states the "cost of producing wheat in the northwest provinces, Oudh, and the Punjab" (which together yield about three-fifths of the entire crop) to be about 57c. He probably means the cost to the interior shipping. Consul General Mattson, in a report to our government in 1882, says that the ryot can afford to sell his wheat in a contiguous market at 50a.60c per bu, "but when it does not bring that price or very near it he consumes his small supply or stores it in a hole under ground until a more favorable time shall come." The New York Produce-Exchange Weekly states the aggregate charges from the producer to the consumer in the European market to be not less than 70c per bu. Mr. Dodge, in the September, 1884, report of the department of agriculture, speaking of the rail rates from the principal wheat-growing districts of India to the seaboard, says: "In other words, the average of the four Indian rates

is fully 50 per cent. higher than the rate on the American lines between these two cities (Chicago and New York), while the advantage on the side of the United States is very much greater still if the Indian rates are compared with our rates by lake and canal, or even by lake and rail."

From these statements it seems safe to conclude that wheat will flow freely from first hands in the interior of India, at about 60c. per bushel, but that at anything below \$1.30 in the European markets we need fear no very active competition on the part of the Indian grain merchants. A striking proof of this vast assertion is found in the fact that during the first eight months of this year only about 4,500,000 bu. left the shores of India as compared with 12,500,000 bu. exported in the same period last year. (A comparison of our export movement shows an increase.)

The facts in relation to the possible extension of wheat culture in India are summed up by Mr. Dodge, in the report referred to, as follows: "Briefly, it may be said that in the regions most favorable to wheat culture in British India, 83,000 square miles of land are reported as culturable and not yet occupied. This is equivalent to 53,504,000 acres, of which—supposing that when brought under cultivation it will be apportioned between the different crops, as the land now in cultivation is apportioned in the same provinces—some twelve or thirteen million acres may be available." The area now under cultivation is about 26,000,000 acres, yielding annually 252,000,000 bu. and Mr. Dodge estimates a possible increase of 123,000,000 bu., making an aggregate crop of 375,000,000—not a startling showing when compared with the claims advanced by the believers in cheap Indian wheat.

The whole claim that India's wheat is destined to be a great and growing factor in the world's supply is based upon the assumption that an immediate increase of railway mileage is contemplated, which will furnish an outlet for the surplus of large areas of cultivated land now without a market and aid in the development of the unoccupied land. The facts in reference to the proposed increase of facilities are these: The Indian government, by a rule of parliament, is restricted from borrowing more than £2,500,000 in any one year for railroad enterprises. Efforts are being made to repeal that rule, and in June last a representative of the Indian government laid before a select committee of the House of Commons, appointed to consider the question of railway extension in India, a plan for building 7,328 miles of road, of which 3,896 were deemed indispensable for providing relief in case of threatened famine while the remaining 3,432 were suggested "to be desirable" if individuals could, by the offers of land subsidies, be induced to build them. As yet no action has been taken by parliament, but it seems very probable that the government will, for its own protection, eventually build the 3,896 miles referred to, but very improbable, in view of the great uncertainties in reference to the tonnage, that private capital will rush into the enterprise proposed.

In addition to those already mentioned, there are other considerations which have great influence in determining India's position as an exporter. The population increased over 54,000,000 from 1858 to 1881, and at the latter date was, in round numbers, 254,000,000 and increasing rapidly. It is estimated that two-thirds of the adult male population are directly supported by the land, besides those directly or indirectly connected with it. This unwise distribution of labor renders the prosperity of the nation entirely dependent upon a successful issue of the harvest, and makes it necessary that a large reserve of food grains should be kept constantly on hand to supply the deficiency

caused by a total or partial failure of the crops, to which the country is peculiarly liable owing to the irregularity and insufficiency of the rainfall. In the event of a failure practically the whole business of the country is suddenly stopped, and, having no reserve of industrial labor to produce commodities during the enforced idleness of the agricultural class for exchange with the food-importing nations, the distress is widespread, and the progress of the country is checked to an extent impossible in a community where distribution of labor is more judicious.

The annual supply per capita is but one bushel—a proportion of wheat that seems utterly insufficient in a country where the consumption is almost entirely of grain, and which is ridiculously small when compared with the requirements of great meat-eating nations of the world. And it is folly to expect any rapid increase in production in a nation whose habits of mind and body have been fixed by a thousand years of ignorance, superstition, and prejudice, while it may safely be assumed that the increase in population will be as steady and regular as the coming of the seasons. Owing to the absence of transportation facilities, the supply of the food grains is very unequally distributed, causing at times "a scarcity amounting to a famine in some parts of the country," and in others a surplus for which there is no market. Mr. Cross reports having seen wheat sold in a certain district at a higher price than was current in London; and Dr. Hunter speaks of another district where the price was about 18c per bushel. A correspondent of The London Times, speaking of the proposed Calcutta-Magpore railway, says: "Last year the central provinces had an abundant harvest, while in many of the Bengal districts the crop failed, and scarcity and high prices now prevail." It seems, therefore, that with the present per capita supply of wheat the immediate effect of an increase of mileage will be to equalize the distribution rather than to increase the export movement.

And now a word as to the unparalleled low prices of the last year. The average annual production of Europe for the 10 years 1874-1883, was approximately 1,150,000,000 bu. The largest crop was harvested in 1874—viz., 1,346,000,000. For the two following years the crops were slightly under average, but in 1877 and 1878 they improved, being 1,210,000,000 and 1,209,000,000, respectively. The yield of 1879 was the smallest of the period—1,008,000,000. Then came the abundant harvest of 1882, 1,270,000,000, followed by the small crop of 1883, 1,066,000,000—86,000,000 below the average, and the smallest crop but one for 10 years. So that while the demand steadily increased, the European supply during the last half of the period was about 340,000,000 less than the first half.

Clearly, then, the theory that over-production (in the ordinary acceptance of that word) is the cause of the low prices, is not tenable, and must be abandoned. The cause is undoubtedly the noticeable lack of speculative support in the world's greatest grain market, and a temporary under-consumption, particularly in Europe, caused by the greatest financial and industrial depression, which has produced an inability on the part of many, and an indisposition on the part of all, to purchase as freely as during the period of great speculative activity just passed. The belief that this condition is but temporary, and that the vast business of wheat raising in this country will shortly be restored to remunerative basis, seems fully warranted.

THE SECTION GANG.

A few days ago a section gang, Mike Maginnis, foreman, was working on a piece of track on the Texas & Pacific road, a

short distance north of New Orleans while the thermometer registered 100° in the shade.

The men were toiling away slowly and perspiring profusely, but Maginnis, the foreman, in order to escape the heat, seated himself in the shade of a small tree and gently fanned himself with his hat as he gave his men directions how to do the work. This excited the ire of Tim Ryan, one of the brawnies men in the gang, who dropped his shovel, glanced up to the sun and said:

"Mister Maginnis, I want to say it, and be the devil I'll say it, that ye are havin' an' aisy time of it in the shade beyant there, fanning yeself wid the sthyle of a lady, an' sure we're wurruking when the hate is enough to burn the horns from a bull. Be gorra, why don't ye stand wid yer men like a dacint man."

"Now I say Tim Ryan," replied Maginnis as he rose from his seat, "I don't want the last talk from ye, and fwhat is more I'll not have it, d'y'e mind that now; but sure if ye didn't spit on yer hands ivy blessed minute, and kape lookin' afther the sun, you could wurruk an' perspire aisy like, an' not be troubled with the hot."

"If ye think, Mister Maginnis, that I'm a baste or a mule, then by the piper of Dublin, I'll—"

"Now, Ryan, I'll stand no more of yer gab, but if ye don't help Rafferty, wid the heft of yer sphade, by the breath that me mither gave me, I'll come thayre an' measure the length of me arm wid ye. Be dad and if I come thayre an' I find ye thayre, sure Tim Ryan as the angels have wings, ye will not be thayre, an' the devil will take ye for his son."

The forcible language of Mr. Maginnis, who the day previous had knocked Barney McGrew's right ear off with a piece of scantling, had the desired effect, and Ryan proceeded with his work without further parley.

The long silence caused Rafferty, who was something of a philosopher, to say:

"Well, Ryan ye ought to know, and ye wud know if ye was eddycated, that we have tin long wakes in the month of August an' all the cry is wather. The sun in the month of August stands sixteen hours in the same place, an' the devil a bit will it move to accomodate ye; an' sure the more ye grumble, as Father Bourke sed to Flanagan, sure more will be the penance. I'm willin' to stand the hot wid ivy man on the road, but I must say that I don't like the way Mistress Gilly boards the min on the siction. Last night sez I, Mistress Gilly, have ye the last taste of whate bread about yer primises, that wud sit aisy on a sick man's sthumic. She sez, sure Mister Rafferty, I've nothing but corn bread, an' ye're welcome to it. Sez I, Mistress Gilly, corn was made for horses, an' if ye had a husband I'd bate him until he cried murther. Thin Mistress Gilley gave me a bit of her tongue, an' it's not dacent, an' I wint away an' struck McGilligan, who is liftin' a tie a couple of rods down the thrack thayre. Mrs. Gilley is not at all like Mrs. Mulcahy, who boorded the siction on the Western Division. Ach, by the mimory of St. Patrick, she was a darlint. She ivery mornin' gave us whate bread for briekfast, an' the likes of the way we ate was never seen, I tell ye."

"I say now, Rafferty," interrupted Mr. Maginnis, the foreman. "Sthop talkin' and attind to yer shovel. Be gorra fwhat's the sthyle of ye? why don't ye give a hand to Finnerty and put the dirt under the ind of the tie while he puts his heft on crow-bar."

"Well, I'll let ye know Mister Maginnis that I attend to me wurruk and I attind to it just as I please."

This speech made Mr. Maginnis indignant, and he whipped off his hat, threw it violently on the ground and exclaimed:

"Me name is Maginnis, an' I'm the boss of the tenth siction of the Tay and Pay road, an' if you, Pat Rafferty, or any other man in me hearin don't like me instructions thin let him stand before me, an' as sure as me name is Maginnis I'll welt him on the head."

The remarks of Mr. Maginnis were received with respect and silence. The men continued their work, the sun poured down at least two degrees hotter, and Mr. Maginnis, seeing that no fight was in sight, again took his seat in the shade and resumed his fanning.—New Orleans Times-Democrat.

THE HEAT-CONDUCTING POWER OF MATERIALS.

Mr. J. J. Coleman, in a paper read before the Philosophical Society of Glasgow, describes some interesting experiments made by him to determine the relative best conducting power of fibrous and spongy substances, such as cotton, wool, sawdust, etc. The apparatus used resembled in its general features the Lavoisier Calorimeter designed for measuring specific heat, and the method employed by the experimenter entitles the results to no little amount of consideration, and bespeak the accuracy of his conclusions. We note that what he terms "silicate cotton" was the worst heat-conducting and consequently the best non-conducting material. The description of this substance to the effect that it "resembles cotton wool in appearance, and is produced in large quantities by blowing steam into melted blast furnace slag," proves it to be what is so favorably known in our country as a non-conducting material, "Mineral wool." A resume of Mr. Coleman's conclusions is given in the following table:

RELATIVE CONDUCTING POWER FOR HEAT.	
Silicate cotton.....	100
Hair felt.....	117
Cotton wool.....	122
Sheep's wool.....	136
Infusorial earth.....	136
Charcoal	140
Sawdust	168
Gas works breeze.....	230
Wood and air breeze.....	280

SPECIAL NOTICES

HOW DOES THIS SUIT?

"Cooch's Bridge, Del., Aug. 25, '84.
"Messrs. Kreider, Campbell & Co.,
"Philadelphia, Pa.

"Gentlemen: Your machine was sent here against an —, on condition that we should keep the best, and we tried each machine, and are frank to say that if your machine cost us \$500 and the other was offered us as a present we should take yours, as we cannot find a fault with it. The above machine has a capacity of 50 bushels per hour."

We think best not to publish name, but it will be given upon application. Address, KREIDER, CAMPBELL & CO.

Philadelphia, Pa.

BOLTING CLOTH.

Do not order your cloth until you have conferred with us. It will pay you, both in point of quality and price. We are prepared with special facilities for this work. Write us before you order.

CASE MANUFACTURING CO.,
Columbus, Ohio.

Office and Factory, 5th Street, north of Naughton.

BUCKWHEAT FLOUR

Always commands a better price, and gives better satisfaction to the consumer when made by the aid of Crausons' Silver Creek Roller Buckwheat Shucker. This is a fact which we can demonstrate to any miller who will write us.

G. S. CRANSON & SON,
Silver Creek, N. Y.

SPECIAL ADVERTISEMENTS.

Advertisements of Mills for Sale or Rent, Partners Wanted, Machines for Sale or Exchange, etc., etc., cost 1½ cents per word for one insertion, or 4 cents per word for four insertions. No order taken for less than 50 cents for one insertion, or \$1 for four insertions. Cash must accompany the order. When replies are ordered sent care of this office, 10 cents must be added to pay postage.

WANTED.

A Miller, competent and who has had experience with rolls. COLTON BROS., Bellefontaine, Ohio. 236

SECOND-HAND WATER WHEELS.

Several Leffel water wheels, thoroughly repaired, and in good order. Write for sizes, condition, prices, etc., to JAMES LEFFEL & CO., Springfield, Ohio. 2027

MILL FOR SALE.

A steam feed mill located near Ridgefield, McHenry Co., Ill. In perfect running order, with a good trade. Will sell cheap. Address, C. H. ORMSBY, Ridgefield, Ill. 2528

WANTED.

A practical mill man for a partner, or will sell a first-class merchant mill, with cotton gin attached. Finest location in America. Address, JOHN ESTES, Abeline, Taylor county, Texas. 1821

FOR SALE.

Two Double Odell Roller Mills 9x18; One Double Allis Roller Mill 9x18; One No. 1 Double Case Purifier. We want to buy a 9x30 Double Roller Mill. COLTON BROS., Bellefontaine, Ohio. 236

A BARGAIN.

One 16-inch under-runner, full iron frame, middlings mill, made by C. C. Phillips, Philadelphia. It is brand new, has never been used, and will be sold at a big bargain as I have now no use for it. Address C. 91, care THE MILLING WORLD, Buffalo, N. Y. 17f

YOU CAN BUY THESE CHEAP.

Three McCully Corn Cob Crushers. The above articles are brand new, in perfect condition, just as they left the factories, and will be sold very cheap for cash. Address S. 30, care THE MILLING WORLD, Buffalo, N. Y. 17f

FOR SALE.

A fifty-barrel steam flour mill, 3 run of burrs and five sets rolls, with other necessary machinery; all nearly new, and doing good work. An upright Payne 50-horse power engine. Price, \$10,000; terms easy. J. H. DEARBORN, Silver Lake, Kan. 251

FOR SALE CHEAP.

One 6-horse power engine and 10-horse power boiler, all complete, price, \$350; one 8-horse power engine and 10-horse power boiler, price, \$375; one 10-horse power Portable complete, price, \$350; one 10-horse power Russell Traction, price, \$500; one 4-horse power vertical engine, price, \$120. Call or address for particulars EZRA F. LANDIS, Lancaster, Pa. 262

FOR SALE.

A four-run New Process water power flouring mill, and 160 acres of very choice land; 40 acres of young timber. Situated in Colfax county, Neb. Mill in good repair. A never-failing water power. All facilities for making first class flour. A good chance to do a first-class paying business. Owners desire to go into other business. This property will be sold at half its cost. Address, J. A. GRIMISON, Schuyler, Colfax county, Neb. 17f

HOOP MILL FOR SALE.

A hoop mill now manufacturing hoops from logs, using "Wilson's Patent Cutting Machine," will be sold at a great bargain. Hoops stand A. No. 1 in the market, and have an established trade for the full cut, over two million made and sold so far this season. The stave and heading business should be added, to economise purchase and use of logs. For information and particulars, apply to D. F. CHASE, St. Charles, Saginaw Co., Mich. 25

SITUATIONS WANTED.

Advertisements under this head, 25 cents each insertion for 25 words, and 1½ cents for each additional word. Cash with order. Three consecutive insertions will be given for the price of two.

SITUATION WANTED.

By a millstone dresser and practical flour miller (English). Address, GEORGE WELLS, Richfield Springs, Otsego county, N. Y. Care of M. F. French. 2528

Toledo Mill Picks and Stone Tool Mfg. Co.



Manufacturer and Dresser of

Mill Picks.

Made of the very best double-refined English cast steel. All work guaranteed. For terms and warranty, address GEO. W. HEARTLEY, No. 297 St. Clair Street, Toledo, O. Send for Circular.

N. B.—All Mill Picks ground and ready for use (both old and new) before leaving the shop. No time and money lost grinding rough and newly dressed Picks. All come to hand ready for use.

ALSO MANUFACTURERS OF
SHAFTING, PULLEYS, HANGERS, COUPLING
AND MACHINE JOBBING.



PUBLISHED EVERY THURSDAY BY
THE AMERICAN INDUSTRY PRESS
(LIMITED.)

OFFICES, LEWIS BLOCK, SWAN STREET,
BUFFALO, N. Y.

G. B. DOUGLAS, - - Managing Editor.
THOS. MCFAUL, - - General Agent.

SUBSCRIPTION.

In the United States and Canada, postage prepaid, \$1.50 per year, in advance; can be remitted by Postal order, registered letter, or New York Exchange. If currency is enclosed in unregistered letter, it must be at sender's risk.

To all Foreign Countries embraced in the General Postal Union, \$2.25 per year, in advance.

Subscribers can have the mailing address of their paper changed as often as they desire. Send both old and new addresses. Those who fail to receive their papers promptly will please notify at once.

ADVERTISING.

Card of Rates sent promptly on application. Orders for new advertisements should reach this office on Tuesday morning, to insure insertion in the week's issue. Changes for current advertisements should be sent so as to reach this office Saturdays.

EDITOR'S ANNOUNCEMENT.

Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling or the grain and flour trade.

Correspondents must give their full name and address, not necessarily for publication, but as a guarantee of good faith.

This paper has no connection with any manufacturing or mill furnishing business. Its editorial opinions cannot and will not be influenced by a bestowal or refusal of patronage. It has nothing for sale, but its space to advertisers and itself to subscribers.

Entered at the Post Office, at Buffalo, N. Y., as mail matter of second-class.

MILLERS' ASSOCIATIONS.

NATIONAL S. H. Seamans, Sec'y. Milwaukee, Wis.
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OUR CLUBBING LIST.

NOTE—You can save money by availing yourself of the following offers. You can please every member of your family by accepting one or more of the following offers. To save money, and at the same time make the family happy, ought to be the main object of every married man's life. See how you can do this.

Take these for Yourself.

THE MILLING WORLD, per year.....\$1.50
WITH
The Builder and Woodworker.....(\$1.00 per year) 2.00
American Architect, weekly.....(6.00 ") 6.50
American Architect, monthly.....(1.75 ") 2.75
American Machinist.....(2.50 ") 3.50
Mechanical Engineer.....(2.00 ") 3.00
American Agriculturist.....(1.50 ") 2.50

Take these for your Family.

THE MILLING WORLD, per year.....\$1.50
WITH

Harper's Magazine.....(\$4.00 per year) 4.50
Harper's Weekly.....(4.00 ") 4.70
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The Century.....(4.00 ") 4.50
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Take these for your Children.

THE MILLING WORLD, per year.....\$1.50
WITH

St. Nicholas.....(\$3.00 per year) 4.00
Harper's Young People.....(2.00 ") 3.00

WHO HOLDS THE WHEAT.

HERE has been a deal of apprehension and misstatement respecting the movement of wheat from farmers' hands during the past two months; but an examination of the statistics show that this movement so far as interior markets are concerned has been heavier during the nine weeks ending with the last Saturday in September than for any of the preceding five years, except in 1879 when the shipments by farmers were less than 2,000,000 bushels in excess of those in 1884. In a long series of carefully prepared statistics, Bradstreet's proves the above conclusion. The receipts of wheat and grain from farmers are collated at the cities of St. Louis, Peoria, Chicago,

Milwaukee, Detroit, Duluth, Toledo and Cleveland, the primary markets for the surplus grain raised in the central, western and northwestern states. Minneapolis and St. Paul are excluded because they turn the bulk of the grain received into flour. The receipts of wheat in bushels at the above named cities for the nine weeks mentioned, were in 1884, 29,002,506; in 1883, 23,453,041; in 1882, 24,814,991; in 1881, 14,634,051; in 1880, 23,056,253; in 1879, 30,754,392. Receipts of flour (in barrels) at the eight primary western markets mentioned in the same periods were in 1884, 1,611,347; in 1883, 1,473,391; in 1882, 1,368,942; in 1881, 1,509,087; in 1880, 1,250,907; in 1879, 1,164,459.

The total quantity of grain (including flour reduced to the equivalent quantity of wheat) sent to the eight primary markets by farmers in the first nine weeks of the past six years, summarized, has been as follows:

	1884.	1883.	1882.
Flour, barrels.....	1,611,347	1,473,391	1,368,942
Wheat, bushels.....	29,002,506	23,453,041	24,814,991
Corn, bushels.....	18,809,949	26,932,102	12,654,074
Oats, bushels.....	15,144,442	15,266,164	12,448,159
Barley, bushels.....	1,795,094	1,830,555	1,224,648
Rye, bushels.....	1,604,495	2,609,240	854,000
Flour to wheat.....	7,251,061	6,631,259	6,160,390
Total quantity grain, bu., including flour	73,607,547	76,722,361	58,286,262
Total grain, exclusive of flour, bushels...	66,350,486	70,091,102	52,125,872

	1881.	1880.	1879.
Flour, barrels.....	1,509,087	1,250,907	1,164,495
Wheat, bushels.....	14,634,051	23,056,253	30,754,392
Corn, bushels.....	36,969,044	31,513,179	20,404,148
Oats, bushels.....	8,537,085	9,898,032	7,175,668
Barley, bushels.....	1,913,649	2,318,572	2,888,678
Rye, bushels.....	1,368,596	1,253,088	1,662,442
Flour to wheat.....	6,790,891	5,629,081	5,670,227

	Total quantity grain, bu., including flour	70,213,816	73,668,203	68,555,555
Total grain, exclusive of flour, bushels...	62,423,422	68,039,122	62,885,322	

This shows that the wheat receipts in 1879 were 5½ per cent. larger than in 1884, whereas the receipts for the present year were 23 per cent. heavier than those for a corresponding period of 1883; 15 per cent. larger than in 1882; 100 per cent. larger than in 1881 and 26 per cent. larger than in 1880, and that with No. 2 red wheat selling at Chicago at 81½ cents. The receipts of flour at initial western markets in the nine weeks, 1884, were the largest recorded, being 9½ per cent. heavier than in a like portion of 1883; nearly 18 per cent. heavier than in 1882; 6½ per cent. larger than in 1880, and 38 per cent. in excess of those in 1879. When we, however, compare the receipts of cereals and flour for a corresponding period at the seaboard market we are confronted with a different series of figures. The total receipts for the nine weeks during the past six years are:

	1884.	1883.	1882.
Flour, barrels.....	2,446,068	2,812,171	2,302,738
Wheat, bushels.....	24,506,254	20,247,466	34,820,767
Corn, bushels.....	5,269,263	15,158,176	4,229,009
Oats, bushels.....	6,759,365	7,375,523	7,906,459
Barley, bushels.....	68,940	72,730	64,974
Rye, bushels.....	814,009	1,597,256	103,734

	Total grain, exclusive of flour.....	37,417,831	44,451,151	47,124,943
	1881.	1880.	1879.	
Flour, barrels.....	2,049,732	2,326,122	2,215,506	
Wheat, bushels.....	23,027,032	34,153,571	47,448,406	
Corn, bushels.....	19,271,890	23,705,607	15,769,443	
Oats, bushels.....	6,165,586	4,665,724	4,568,918	
Barley, bushels.....	68,325	250,580	151,275	
Rye, bushels.....	208,017	573,181	1,181,599	

	Total grain, exclusive of flour.....	48,740,850	63,848,593	69,114,638
	1881.	1880.	1879.	

	Bushels
Nine weeks.	
Receipts at primary markets.....	66,356,486
Receipts at seaboard. 37,417,831	44,451,151
1881. 1880. 1879.	47,124,943
Receipts at primary markets.....	62,423,425
Receipts at seaboard. 48,740,850	63,848,593
	69,114,638

And tabulated totals give the following difference between the quantity of grain, excluding flour, carried from the producer to the interior markets and from the latter to the seaboard:

Flour is, however, an exception and the shipments eastward from interior markets

have increased as follows during the nine weeks:

	1884.	1883.	1882.	1881.
Flour, bbls...	2,215,996	1,562,516	1,570,614	1,488,660

The exhibit seems to demonstrate that western speculators are retaining the grain awaiting an advance in prices.

THE WORLD'S GRANARIES.

The statements of "great grain regions, to be opened soon," which have of late made the rounds through the press, are analysed by the New York Produce Exchange Reporter in a manner so neat and thorough that it will bear a repetition. Speaking about the statement that Russia is to develop her grain regions by the expenditure of

ESTABLISHED 1856.

EUREKA GRAIN CLEANING MACHINERY | GENUINE DUFOUR BOLTING CLOTH

OVER 18,000 MACHINES IN USE.

OUR LINE COMPRISSES

The Eureka Separator,

The Eureka Smutter and Separator,

Eureka Brush Finisher,

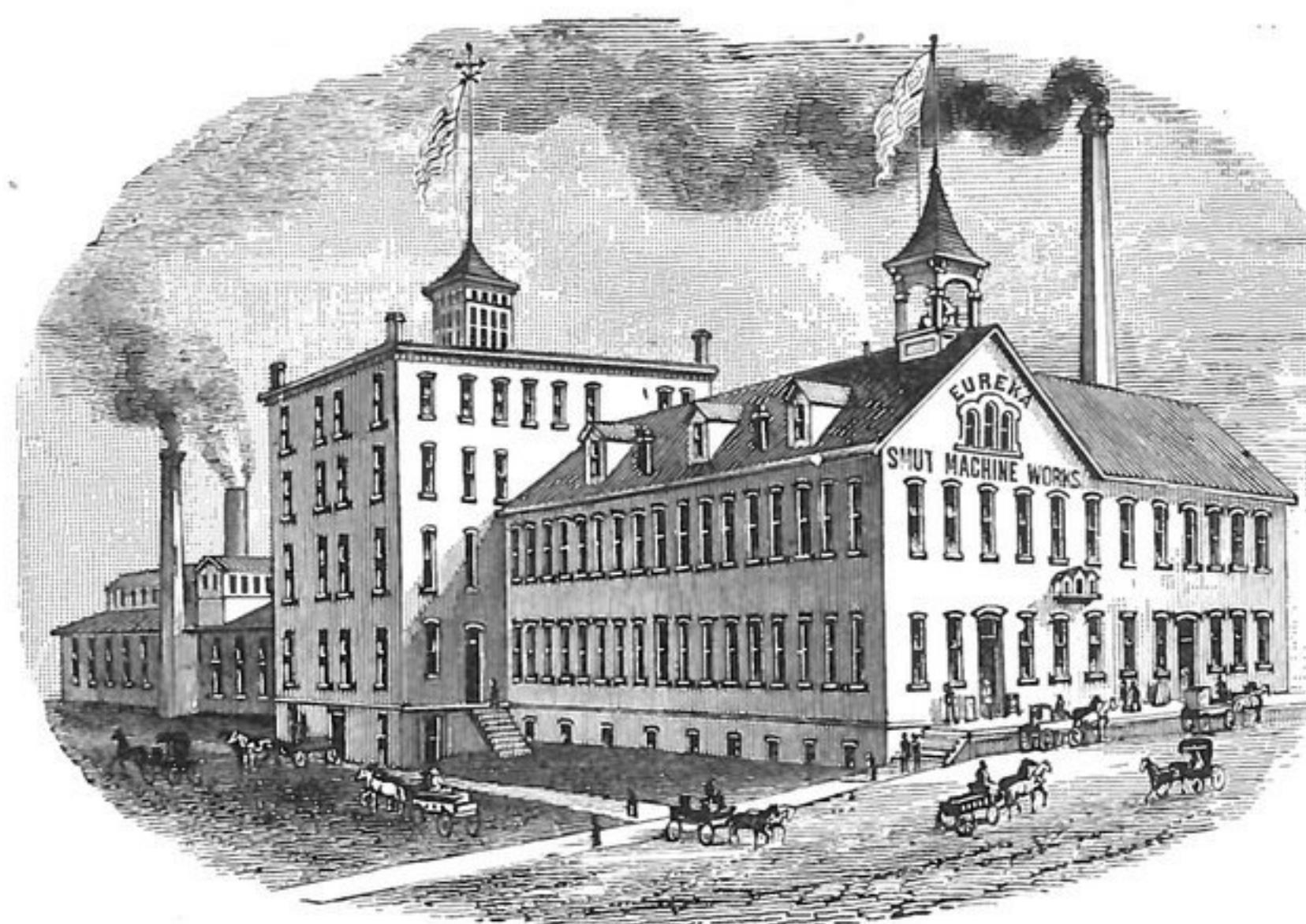
The Eureka Magnetic Automatic Separator,

Silver Creek Flour Packer.

Our establishment is the oldest, the largest and most perfectly equipped of its class in the world, and our machinery is known and used in every country where wheat is made into flour.

HOWES & EWELL,
SILVER CREEK, N. Y.

European Warehouse and Office: 16 Mark Lane, London, E. C. Gen. Agency for Australian Colonies and New Zealand. Thos. Tyson, Melbourne, Victoria.



We handle this justly celebrated cloth in large quantities, and can fill all orders upon receipt. For such as may prefer a cheaper grade, we offer our

ANCHOR BRAND BOLTING CLOTH.

Guaranteeing it to be equal in every particular to any other cloth on the market, except the Dufour. We have handled it for years, have sold thousands of yards of it, and know it will fully sustain our representations.

Send For Samples of Cloth, Our Style of Making Up, and Prices.

HOWES & EWELL,
SILVER CREEK, N. Y.

Stilwell & Bierce Mfg. Co., Dayton, O.

FOR EVERY DUTY

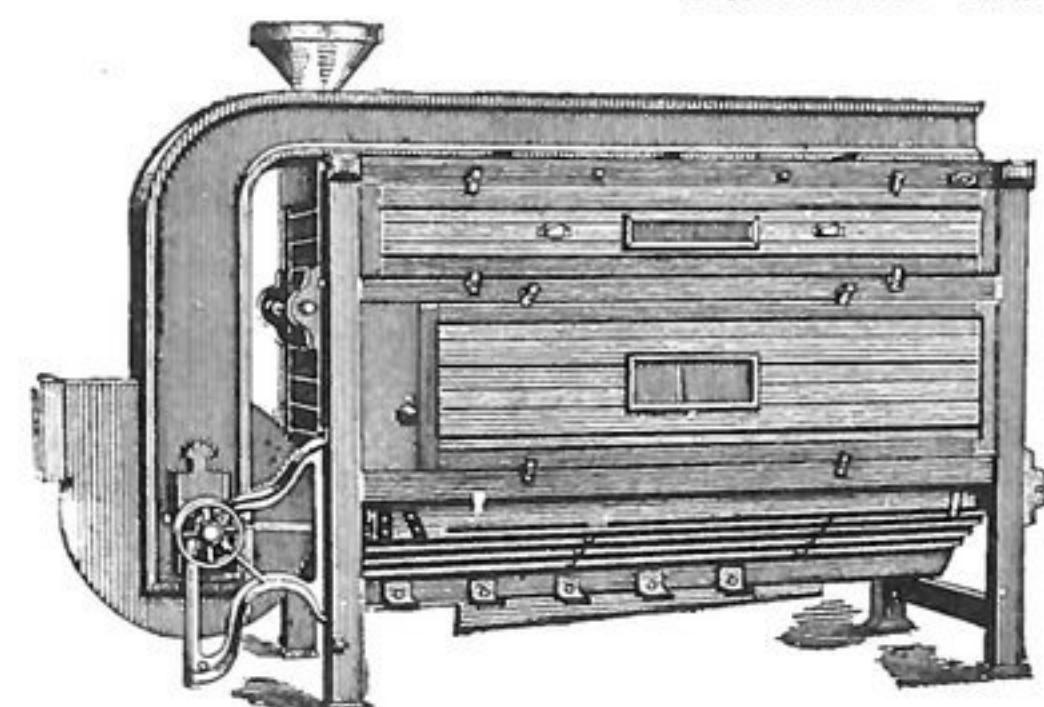
THE ODELL CELEBRATED ROLLER MILLS

TAKE THE LEAD

Stilwell & Bierce Mfg. Co., Dayton, O.

**WOLF & HAMAKER'S LATEST IMPROVED
MIDDLING PURIFIER AND DUST CATCHER**

The Only Machine with Two Sieves, for Fine and Coarse Middlings. The Only Machine with Balance Motion, Consequently no Jarring or Shaking.



A DAPTED to all styles of milling, high or low grinding, as fine or coarse middlings can be treated separately on one machine. Economy in space, as the machine is a double one. A perfect cloth-cleaning device. No brushing or wearing of cloth. **Licensed Under All Conflicting Patents.** We are the Agents for the E. P. Allis Roller Mills, and Mill Builders and Contractors. We are at all times prepared to furnish plans and estimates, and to contract for the erection of first-class mills of any desired capacity from 50 to 500 barrels. Parties contemplating Roller Mills, or remodeling old mills will find it to their interest to write for Prices and Terms. **Wolf & Hamaker's Latest Improved Bolting Chest.** **Also Mill Furnishings of Every Description.**

OUR DUST CATCHER IS GIVING THE BEST OF SATISFACTION, AND OUR PRICES ARE SUCH THAT EVERY MILLER SHOULD HAVE THEM.

WOLF & HAMAKER, ALLENTOWN, PA.
ON VIEW AT PERMANENT EXHIBITION OF MILL MACHINERY,
36 BROADWAY, NEW YORK.



RICE CULTURE.

Rice culture is looked upon by a large number of people as one of less than ordinary importance, and it is doubtful if half the people know of the vast extent of the use of this product in the manufacture of beer and candy, in addition to its culinary purposes. No doubt, also, not more than one in a thousand could tell how ancient an industry rice production is and how or when it became introduced into this country. Only close students of ancient history could tell this, and it will no doubt require extremely credulous people to believe that the earliest record of rice in history, its introduction into China, was several centuries before the deluge, 2822 B C.

To insure improvement in character and productiveness its culture in China was encouraged by royal favor, and Imperial edicts were issued in regard to the selection of seed. Its value as food caused a widely extended culture and to-day it is used in all parts of the world as food, and a large proportion of the world's population live on it almost exclusively. In China Japan, the East Indies, and in the islands adjacent the success or failure of the rice crop means plenty or famine to nearly 800,000,000 people. The rice trade is not so extensive that it is made an exclusive trade product by many. The oldest house in the trade in this country is in Wall street. It handles fully one-half of the American product, and has branch houses in Charleston, Savannah, and New Orleans. With regard to the product, its quantity and quality, etc., a member of this firm, who has made rice culture a study, said:

"The quantity grown in the East Indies, and other countries is enormous, amounting in a single year to 250,000,000,000 pounds, or 2,000 times as much as is raised in the United States in our best seasons. This immense quantity is mainly consumed in the countries where it is grown. Large amounts are exported to Europe and North and South America, yet so great is the product that these exports scarcely exceed 1 per cent of the total. The movement from the Indies to Europe averages not less than 8,000,000 to 10,000,000 bags annually. The exports thus far this year amount to 5,460,800 bags, with 1,300,000 bags afloat, and 736,192 bags in stock in England. In the southern districts of China the land is flooded before plowing and harrowing, the buffalo or water-ox being used to work the land, the desired result being a soft, plastic mixture of mud and water about six inches in depth. The seed in the meantime has been planted in small patches of highly enriched soil, and by the time the ground is prepared a vigorous growth is started and transplanting in rows about twelve inches apart follows. From ten to twelve plants are put in each place, the laborer simply pressing the roots into the soft soil, and as his hand is withdrawn, the mud and water fill in around the roots, and the planting is finished. The rice raised abroad is known as Rangoon, Java, and Patna. We also receive some from Japan.

"Turning attention nearer home, we find many points of interest in its culture in this country. The first rice planted in this country was by Sir William Berkeley, of Virginia, in 1647, but it was too far north to be attended with success. In 1694 a vessel was blown out of her course and put into Charleston, S. C., for repairs. Before starting on his homeward voyage, the Captain gave one of his friends, Landgrave Thomas Smith, a small handful of rough rice, suggesting that it might be cultivated and make an additional article of food. It was planted in Mr. Smith's garden, the product carefully preserved and distributed among the colonists, until from this small beginning was developed our Carolina rice,

known the world over for its superior quality. Now we grow rice in North and South Carolina, Georgia, Louisiana, Texas and Alabama. The American product amounts to about 150,000,000 pounds annually. The poorest rice grown comes from Saigon.

"For many years we have grown sufficient rice for our own consumption, but this season we shall be required to draw on foreign rice. This is not due to a decrease in our own product, for the report of a damage to the crop shows upon inquiry to be confined to a limited area. As our foreign population grows, the consumption of rice increases; and it is coming largely into general use on our tables, taking the place of potatoes to some extent. We import a great deal of broken rice, which is extensively used by brewers. We also import a great deal of rice flour, which is used by confectioners in making candy and for making sizing. Bakers also use rice flour to some extent, in place of starch. The Mississippi river is also favorable for rice-growing, and ought to make the lands of Louisiana productive. Prices vary according to the production, and range from 4½ cents a pound for common, to 6 cents a pound for fancy grades. Foreign rice ranges in price, after the duty is paid, about the same as domestic. The idea of the protective tariff of 1865 was to allow the planters to rehabilitate their plantations and restore them to former productiveness, as well as to encourage an extension of the culture, until such a time as the industry can stand alone, and rice be produced in such large quantities, and by an economical system of cultivation, at such expense that protection would be no longer necessary, and our rice be able to compete with the markets of the world. It has resulted in increasing the product from 52,802,400 pounds in 1870, to 150,000,000 pounds in 1884.

"The introduction of intelligent labor and labor-saving machinery, would reduce the cost of production to such a degree that the prices allowable for export trade would be highly remunerative. It is estimated that in eight Southern states there are from 70,000,000 to 90,000,000 acres suitable for rice culture, and otherwise of little value, called waste lands. Louisiana contains more acreage of lands particularly suitable for the cultivation of rice than any other State. At a low average of yield, say 1,000 pounds of clear rice per acre, if these waste lands were brought under tillage, the United States could rival the East, and produce from 70,000,000,000 to 90,000,000,000 pounds yearly."

MILL FIRES.

A very fair illustration of the knowledge which we possess of the causes of mill fires is given in the report of the Magdeburg Fire Insurance Company for the months of June and July. Nineteen mill fires are enumerated, of which thirteen are ascribed to unknown causes; of the other six, one was caused by heating of bearings, one by a damaged chimney, one by lightning, one was ignited intentionally, and two were of incendiary origin. So long as almost seventy per cent. of all fires are due to "unknown causes," any discussion of fire prevention must appear premature, for how can we expect to find a remedy when we are unable to discover the origin. It is well known that remedies of any kind can be applied in a rational manner only when we know the causes which have produced the disasters, and it seems that a more intelligent inquiry into the origin of mill fires, by competent persons, should bring to light a large amount of valuable information. There used to be a time when almost every boiler explosion was reported as due to a deficiency of water; after, however, experts, men who knew machinery and boilers, and were trained as

careful observers, took part in the business, the number of causes of boiler explosions multiplied rapidly, with the result that such catastrophes decreased considerably in frequency. If the causes of all the mill fires of "unknown origin" were known, appliances to guard against them could be invented, but without this knowledge it resembles a groping in darkness for something that we know nothing about. A committee of millwrights and millers appointed to investigate the possible or probable causes of a mill fire, would undoubtedly discover data entirely ignored or neglected by the average mortal, and many points might be gained, and valuable information collected in this manner, which would in the near future prevent the large number of mill fires due to "unknown causes."

MASHED THE OLD MACHINE.

The story told of old Jerry Drew, who under the influence of benzine, had a skirmish with a locomotive on the N. Y. C., near Rochester, recalls a similar occurrence on the H. & St Jo. near Hannibal, Mo. In the vicinity of Hannibal lived a hard headed old farmer who had grown rich; who intensely hated railroads and all modern improvements, and was particularly fond of such ancient and time honored beverages as "Old Rye." He owned considerable town property. He fought the city council for years, refusing to pay taxes for street improvements. No matter how deep the mud, he trudged in the middle of the street, refusing to compromise his conscience by using the sidewalks. His especial aversion in this life was the Hannibal & St. Jo. railroad, which cut off a few feet from one corner of his farm, for which he refused all offers of damages.

The road from the city to his farm crossed the railroad track, and in driving out home afternoons, he had many a skirmish with the trains. After steaming up with his favorite beverage, he would not alter his course for man or the devil, and he always seemed to be on the track with his team, just at the moment No. 4 was due. Many are the stories to this day repeated by the veteran engineers of the H. & St. Jo. of their encounters with Old Tom Diggs. As the old man grew in years his head got harder, and his consumption of old rye increased. At last there came a day when he won a glorious triumph over his old antagonist, which filled all the remaining years of his life with joy.

No. 4 came thundering down the track. Harry Bain was at the throttle, but his eye was not fixed on the gleaming steel. He was within a mile of the crossing, made memorable by former encounters with his old enemy. Across the level country, following the line of the wagon road, a whirlwind of dust was seen approaching the railroad track.

"Old Diggs," laconically observed fireman Jake Kauffman.

"It's a race of life or death replied engineer Bain," as he pulled the throttle wide open. "The old man means business this time sure."

On came No. 4 and nearer still the whirlwind of dust on the dirt road swept down the crossing. The excitement grew intense. Which should cross first, the old man or the train? It was indeed a race for life or death. The only hope to avoid a collision was in getting the train over before old Diggs got possession of the track. It seemed that the metal of the iron horse should have been equal to the emergency. But the old man was also on his metal. Above the cloud of dust his tall form could be seen lashing his high strung team to a furious speed.

Engineer Bain saw that the race was lost. He reversed the lever, shut his eyes,

and the collision came. The engine went down the bank. Car after car followed, to add to the dim of the thunder crashes. Finally after the cloud of dust had cleared from the wreck of ruin, an old man was seen standing on the track. His wagon was knocked into kindling wood. His fine horses were killed. Notwithstanding there was a smile on his lips and the light of triumph in his eye, as he proudly surveyed the ruin he had wrought.

Finally the blood stained engineer and fireman climbed up the bank.

"You ternal fools you," exclaimed old Diggs; you must keep out of my way if you don't want to get your d——d old machine smashed;" and he contemptuously turned on his heel and walked off

INTERNAL COMMERCE.

The matter of chief importance treated of in the annual report of Mr. Nimmo, of the bureau of statistics, is the enormous magnitude of our internal commerce. It is shown that the value of the products of the various industries of the United States is seven times the total value of our foreign commerce; nearly three times the total value of the foreign commerce of Great Britain and Ireland, and five times the total value of the foreign commerce of France, including in each case both imports and exports. The total value of the products of industry in the United States is also shown to be a little more than twice the total value of the exports of merchandise from all the countries of Europe. The United States is now the largest manufacturing country on the globe. The value of the products of American manufacture consumed at home is five times the value of the exports of the manufactured products from France to all other countries. The relative value of the internal as compared with the foreign commerce of the country is also illustrated by statements showing that 90 per cent. of the coal mined in this country, 95 per cent. of our iron and steel products, 95 of the products of our leather industry, more than 99 per cent. of our manufactures of wool, 95 per cent. of the product of our cotton manufactures, more than 99 per cent. of our manufactures of silk, and 97 per cent. of our manufactures of glass, glassware, and stoneware are consumed in the United States. The report shows that the total value of the exports of merchandise from, and imports of merchandise into, California, Oregon, and Washington territory for the year ended June 30, 1884, was \$83,565,814. The value of exports was \$46,386,284, and imports \$37,179,530. The exports of petroleum and petroleum products for the eight months ended Aug. 31, 1884, were 327,091,317 gallons, representing \$30,606,628. The exports for the same period of the previous year were 344,892,307 gallons, representing \$30,917,732.

A GOOD START.

"I hear that Gail Fisher, who left here a few months ago, is now married and is living in Indianapolis. Did he marry well?"

"Oh, yes; he married well. He was well when he married."

"No joking. I mean did he get a good start by marrying?"

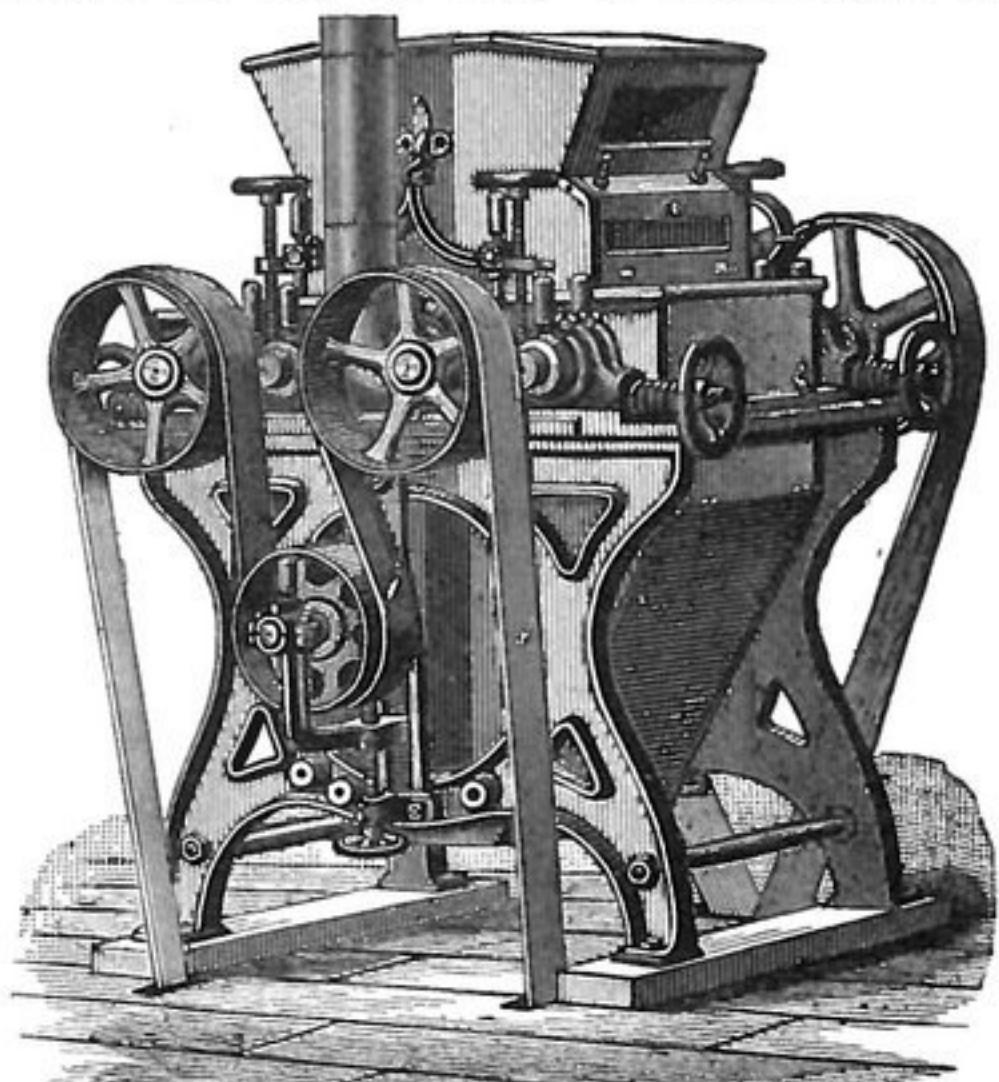
"Oh, yes; he got a good start—he married a widow with seven children."—Ex.

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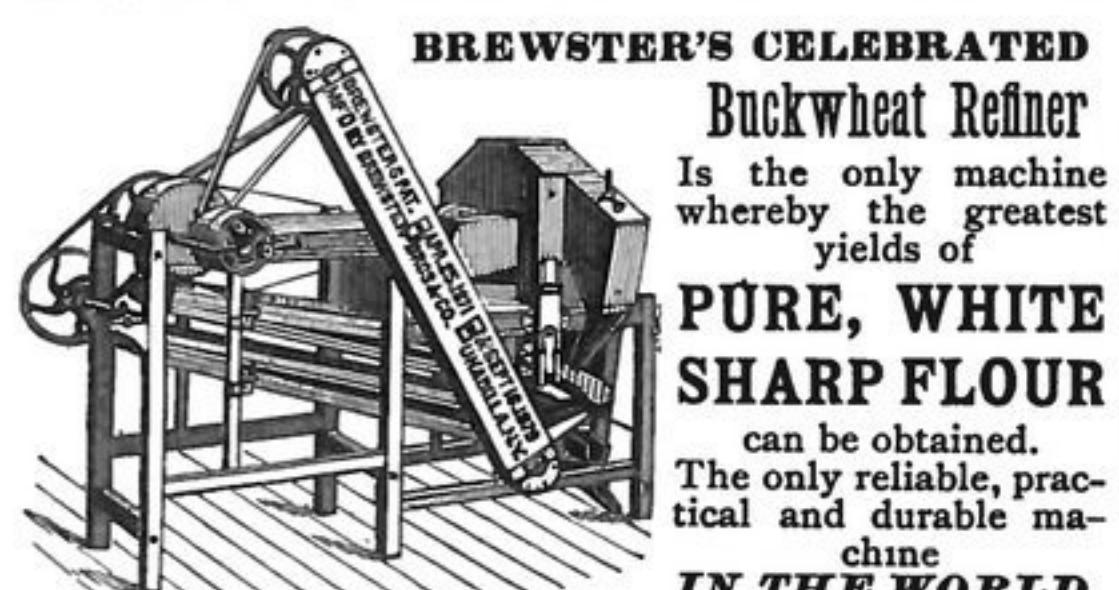
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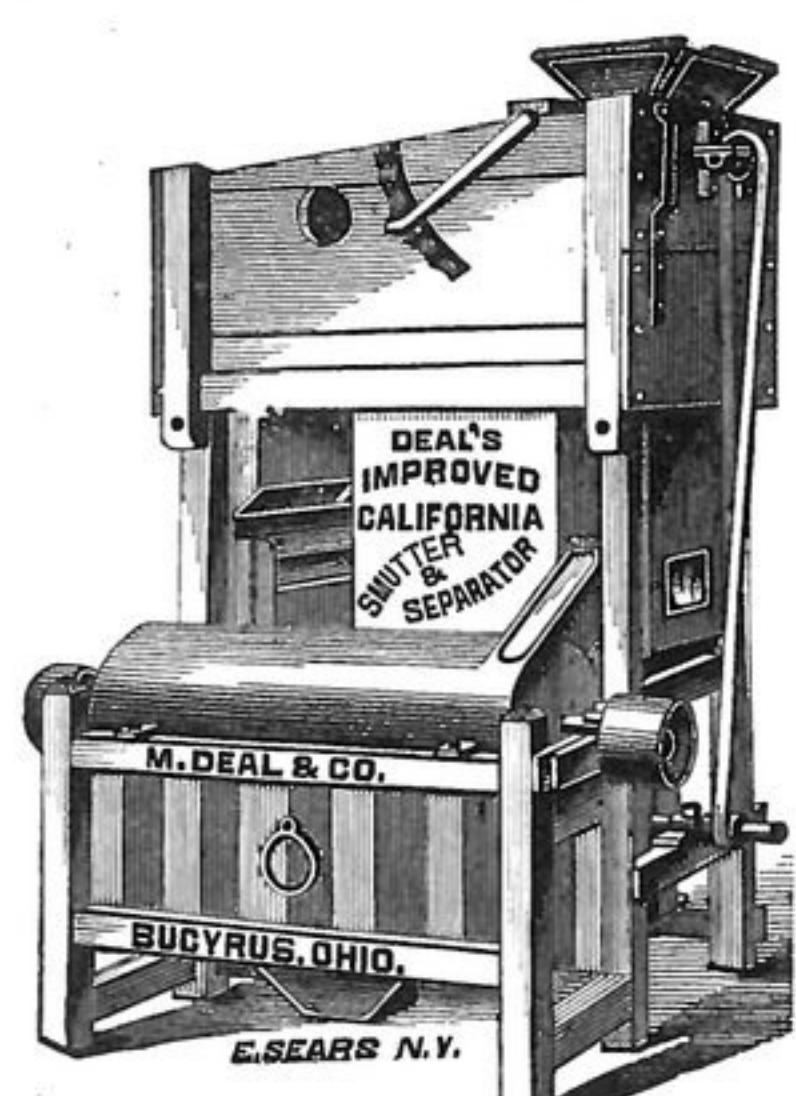
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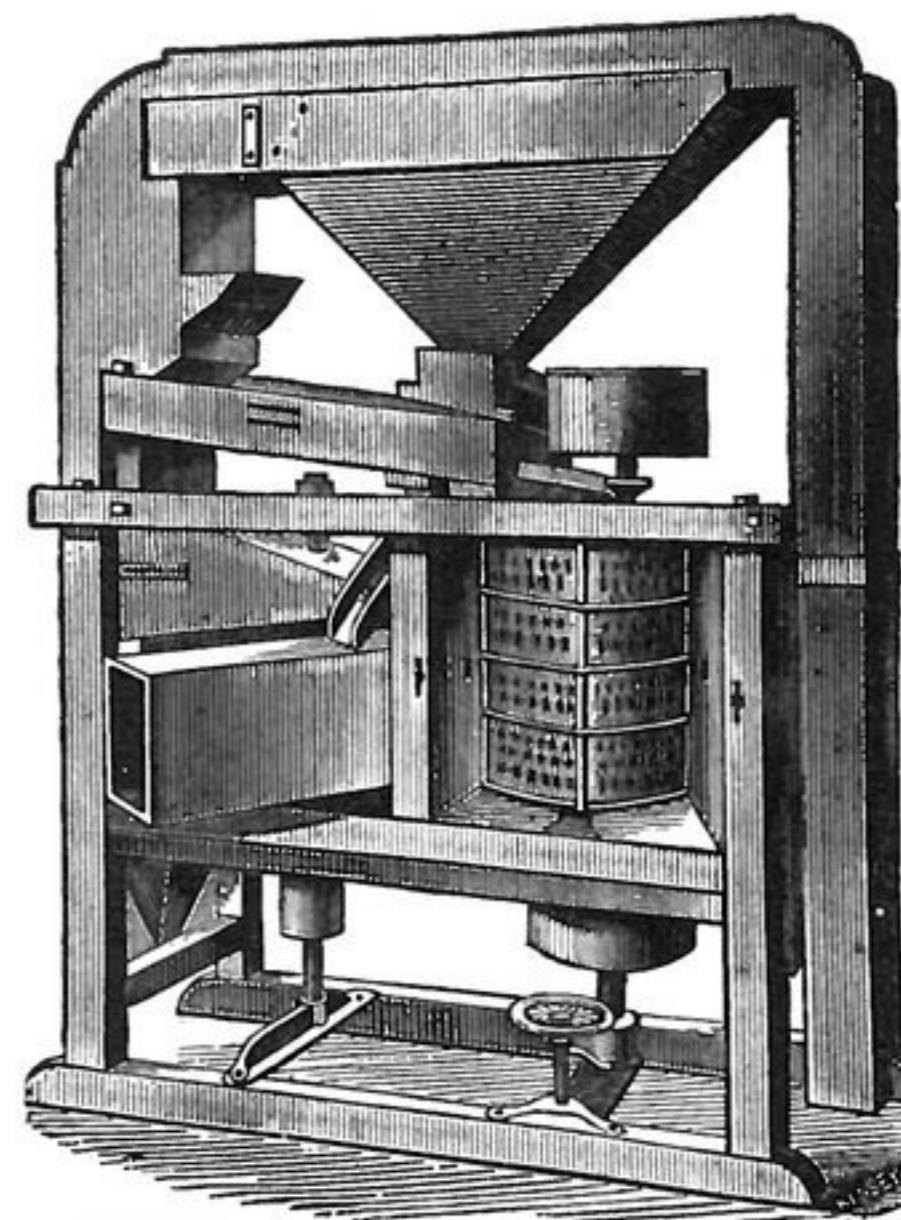
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LIQUID CARBONIC ACID AS A FIRE EXTINGUISHER.

ALTHOUGH liquid carbonic acid is a very recent addition to the articles of commerce, it has already found a large number of applications, and the constantly decreasing cost of its manufacture has lately suggested its use as an extinguisher of fires. A recent patent by Mr. C. Moench, of Berlin, Germany, protects an apparatus for the production of the liquid and the filling of vessels for immediate use.

In an indirect way carbonic acid has been used for that purpose for some time, in the well-known "fire extinguishers," where the carbonic acid is formed in the tank, expelling by its pressure a mixture of water and gas, but where the latter plays only a secondary part.

In the above named patent, the carbonic acid itself is used directly as the extinguishing agent, and trials made in Berlin on a large scale have been eminently successful. There cannot be any doubt that the use of the liquified gas is especially adapted to cases where a rapid and certain action is necessary to prevent an extensive conflagration, for instance on shipboard, in factories or theaters, etc. Tests made by Fresenius demonstrate that an atmosphere, in a closed room, when mixed with from 17 to 20 per cent. of carbonic acid, will not allow any fires to burn. A very decided advantage of such a system of fire extinguishers is the absence of water, the copious use of which often causes more damage than the fire itself.

THE DRIVING CAPACITY OF BELTS.

It has been observed by those who have been investigating the driving capacity of belts, that the tendency with which the pulleys are driven before the belt begins to slip, depends as much upon the adhesion of the belt to the pulley as upon the friction that exists between their working surfaces. In some cases the friction is overbalanced by the tendency of the belt to cling to the pulley, for they may be seen where the surface has been left smooth by lathemen, and contrary to expectation have a greater driving capacity than when left rough in finishing, a result that would not be obtained if friction alone were to be the only resistance that exists in the slipping action of a belt. This is not only the reason why there is nearly thirty per cent. gained in the driving capacity when the grain or smooth side of the belt is brought in contact with the pulleys, but a larger amount of surface in actual contact with the driven surface of the wheel. When the flesh or rough side is used, it is claimed by these observers that a large quantity of air is entrapped in the pores and crevices of the belt when driven at a rapid speed, and when brought between these frictional surfaces must necessarily support a portion of the strain on which the driving friction depends. Although the amount of surface of contact has but little to do with the frictional part of the operation, the driving force depends entirely on the force with which these sliding surfaces are held together, and whatever is brought to bear upon a film of air that must offer a very little resistance to the action of sliding must be taken from the surface in contact that would not be affected with the smooth sides wrought together for the working surface. Everything that interferes with the actual contact, or assists the sliding action of these particles that are to slide on each other by intercepting a film of some lubricating matter, whether it be solid, liquid, or gases, must lessen the driving capacity and

the load which the belt is capable of carrying.—Ex.

ANCIENT EGYPTIAN MECHANICAL METHODS.

Petrie, who is the author of a treatise on ancient metrology, has lately turned his attention to ancient Egyptian processes, we are told by an English journal. Though much labor has been bestowed on the literary remains of Egypt and the description of monuments, little attention has been given to finding out the tools and methods by which their results were reached. The first conclusion to which Mr. Petrie comes is that stone-cutting was performed by means of graving points far harder than the material to be cut. These points were bedded in a basis of bronze; and in boring, the cutting action was not by grinding with a powder, as in a lapidary's wheel, but by graving with a fixed point, as in a planing machine. From discovering spiral grooves in diorite and granite, at least $\frac{1}{10}$ of an inch in depth, the author supposes that an instrument was used of sufficient hardness to penetrate the material that far at a single turn. In this, however, he was corrected by Mr. Evans. The simplest tool used was a straight bronze saw set with jewels; but there is proof of one circular saw which must have been six and one-half inches in diameter.

For hollowing the insides of stone objects, the inventive genius of the fourth dynasty exactly anticipated modern devices by adopting tubular drills varying from $\frac{1}{10}$ of an inch in diameter and $\frac{1}{10}$ of an inch in thickness to eighteen inches in diameter. Other drills, not tubular, were used for small holes, one measuring $1\frac{1}{2}$ inches long and $\frac{1}{10}$ of an inch in diameter. But this is surpassed by the Uanpes, of South America, who drill holes in rock crystal by the rotation of a pointed leaf shoot of plantain, worked with sand and water. The writer of this note has seen, in Porto Rico, stone beads of the hardest material, two inches long, bored longitudinally with an orifice $\frac{1}{16}$ of an inch in diameter. The Egyptians understood rotating both the tool and the work. For the finishing of vases, a hook tool must have been used; but the early Egyptians were familiar not only with lathes and jewel turning tools, but with mechanical tool rests, and sweeping regular arcs in cutting.

In addition to the tools mentioned, are to be noticed those for dressing out drilled cores, stone hammering and smoothing, saws with curved blades, mallets, chisels, adzes, and bow drills. For marking and indicating the plane of the stone, red ochre paint was used in a variety of ways, well-studied out by Mr. Petrie. Rock excavation, both for saving the stone and for the creation of vaults and chambers, was altogether an affair of drilling. Granite boulders were utilized in the pyramids, but the best stones were taken from quarries. The method of handling these immense masses is not known. Mr. Petrie concludes with a sensible remark upon the oft alleged inhumanity of the pyramid and temple builders. To require a man every six years to serve upon the public works, during the season when he could do nothing else, would certainly not be a great hardship.

FIRE PREVENTION.

The most important subject that can engage our attention at this time, is the prevention and extinguishment of fires, says the Insurance Monitor. This, indeed, is the burning issue of the hour. In vain are rates advanced, risks carefully surveyed, adjustments closely made, if attention is not given to the prevention of fires, the prolific source of all our woes. Instead of taking it for granted that the ratio of losses incurred to premiums received must necessarily approximate sixty per cent., would it not be the part of wisdom to devise and ex-

ecute a scheme by which fires may be prevented, or limited in number and severity?

* * * What then is the practical remedy? Local boards should be requested to urge upon municipal authorities the enactment of ordinances creating the offices of fire wardens. Appointed for a term of years, they should have police jurisdiction. Every part of their districts should be thoroughly and frequently visited, and every dwelling, store, factory and mill carefully examined. The defective flue, the over-heated furnace, the convenient ash barrel; and the unnumbered other incendiaries lying in wait to destroy property and lives upon every block of every city in the land, should be abolished and the offending owners summarily dealt with. Special hazards should receive special attention. Greasy rags, neglected waste, untidy floors, and improperly constructed boiler houses, should be watched day by day. After all, carelessness, and oftentimes, criminal carelessness, lies at the foundation of this fiery waste. American life is gauged at a high pressure.

* * * It has generally been thought, and direct observation has confirmed the notion, that the air above the sea is singularly free from the low forms of organic life. MM. Moreau and Plantymansion have taken advantage of their leisure during a voyage in the Gironde, from Rio de Janeiro to Bordeaux, to obtain some data bearing on this question. They have found that over the open sea, at a distance from the vessel, the air contained very little solid matter. The land breezes appear to become rapidly free from the multitude of organisms which they carry with them from populous districts. M. Miguel, of the Montsouris Observatory, regards the fall of germs into the sea as a reassuring fact; breezes blowing from the distant continents, which might otherwise bring epidemics with them become purified, it is supposed, in crossing the ocean. The gentlemen above named found that the atmosphere immediately about the vessel practically swarmed with micro organisms; the vessel seemed to be surrounded by an "atmosphere of microbes."

* * * The temperatures at which the common gases become liquified are given as follows by Prof. D'ewar, the numbers expressing degrees below zero Fahrenheit: Carbonic acid, 112; nitrous oxide, 130; ethylene, the chief illuminating constituent of common coal gas, 154½; oxygen, 299; nitrogen, 320; air, 314; carbonic oxide, 215½. The greatest cold yet produced by man—328 degrees below zero—was obtained by Russian Physicists by the use of liquid oxygen.

* * * Wood pavement is to be given up in London, and the old McAdam system restored. The former is said to have not only failed to realize the expected advantages, but has led, according to Prof. Tyndall's report, to serious afflictions of the eyes and lungs; that is, by continual watering, the wood became saturated with street filth, and then, under the influences of the hot sun, gave forth a pernicious species of dust.

* * Some idea of the difficulties in the way of making large telescopes may be had from the fact that there have been nineteen failures to cast the thirty-six inch glass for the large telescope to be mounted in the Lick observatory in California.

* * Professor F. A. Forel, of Morges, who has for many years recorded his observations on the Mer de Glace, reports that the glaciers of Mont Blanc are advancing again, after a long period of decrease.

* * No less than fifty-seven expositions, it is said, are to be held in the United States during the remainder of the year.

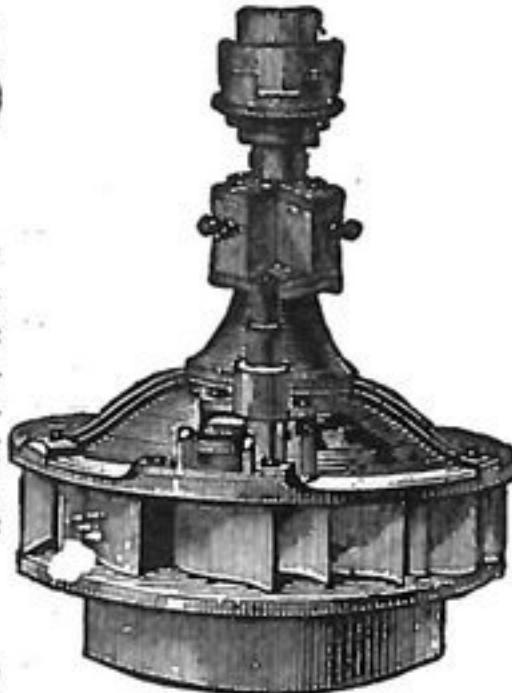


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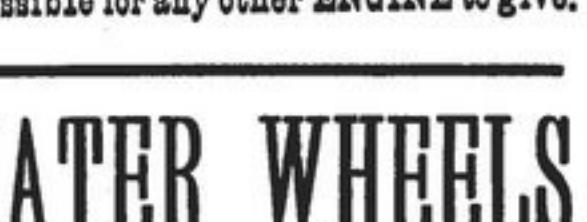
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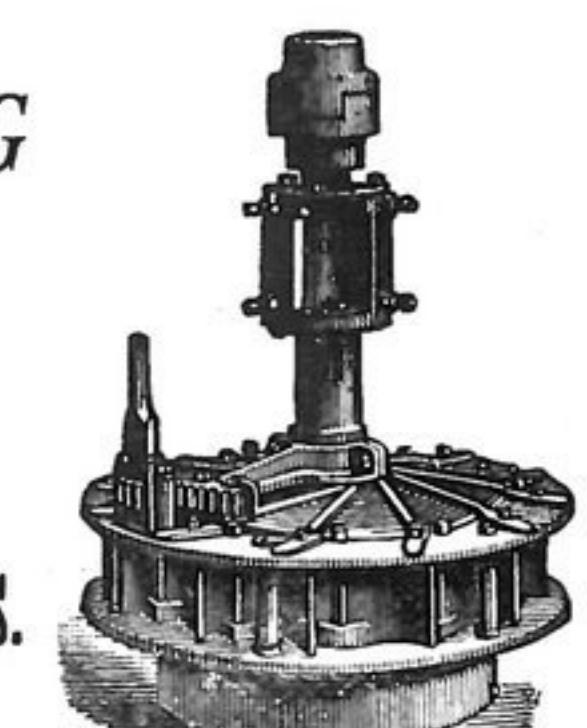
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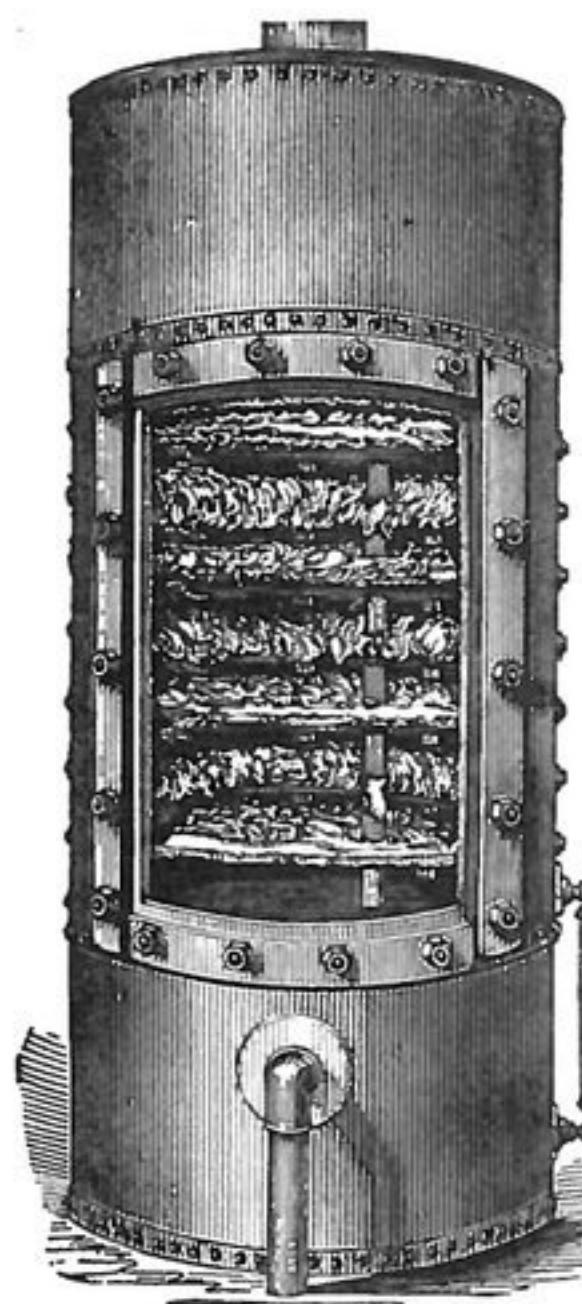
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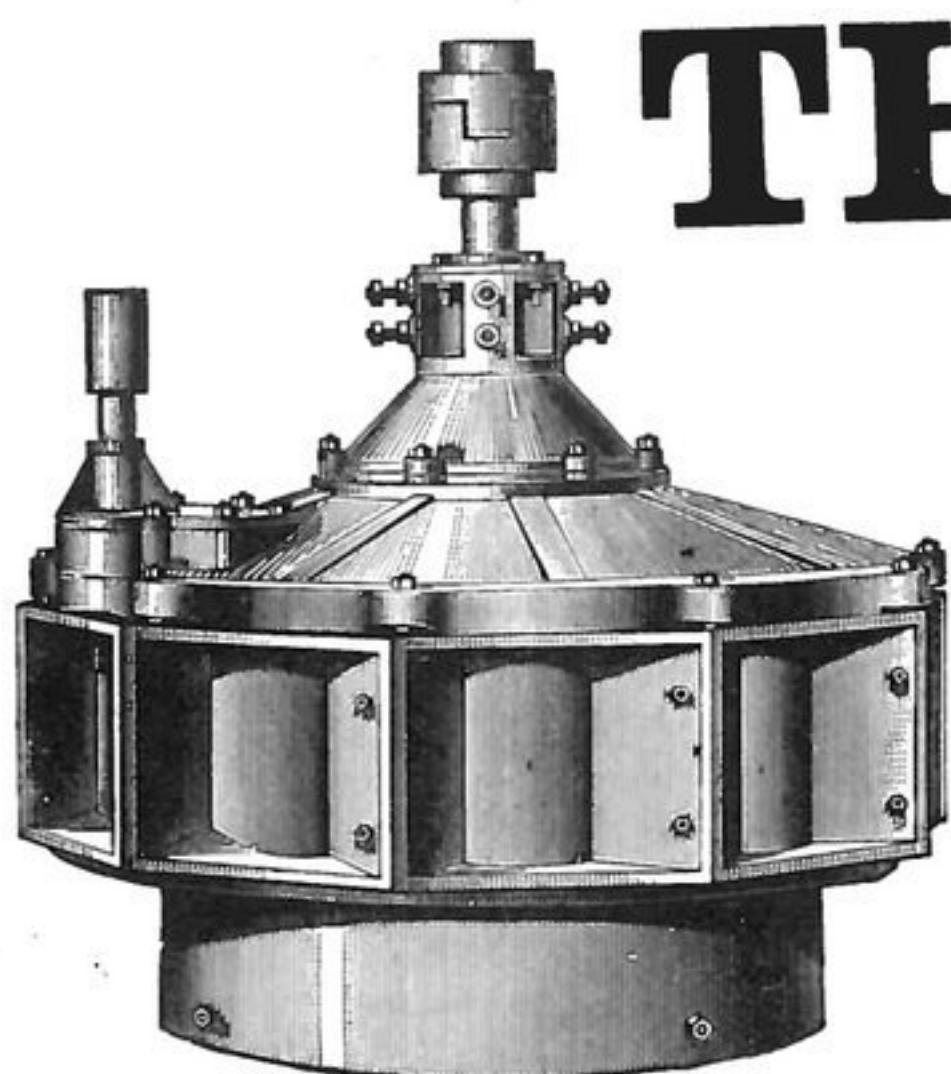
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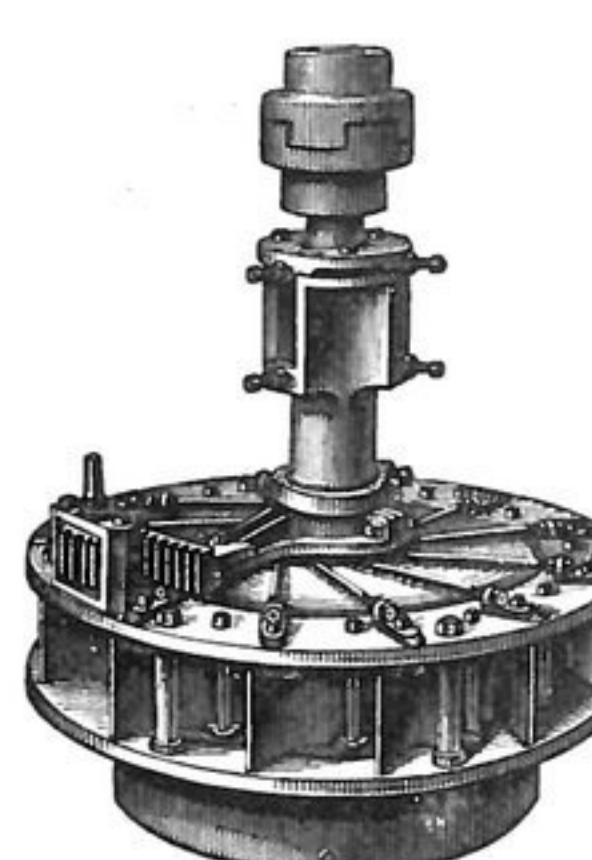
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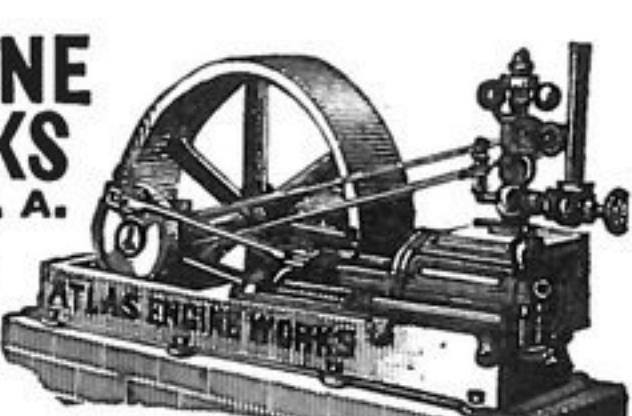
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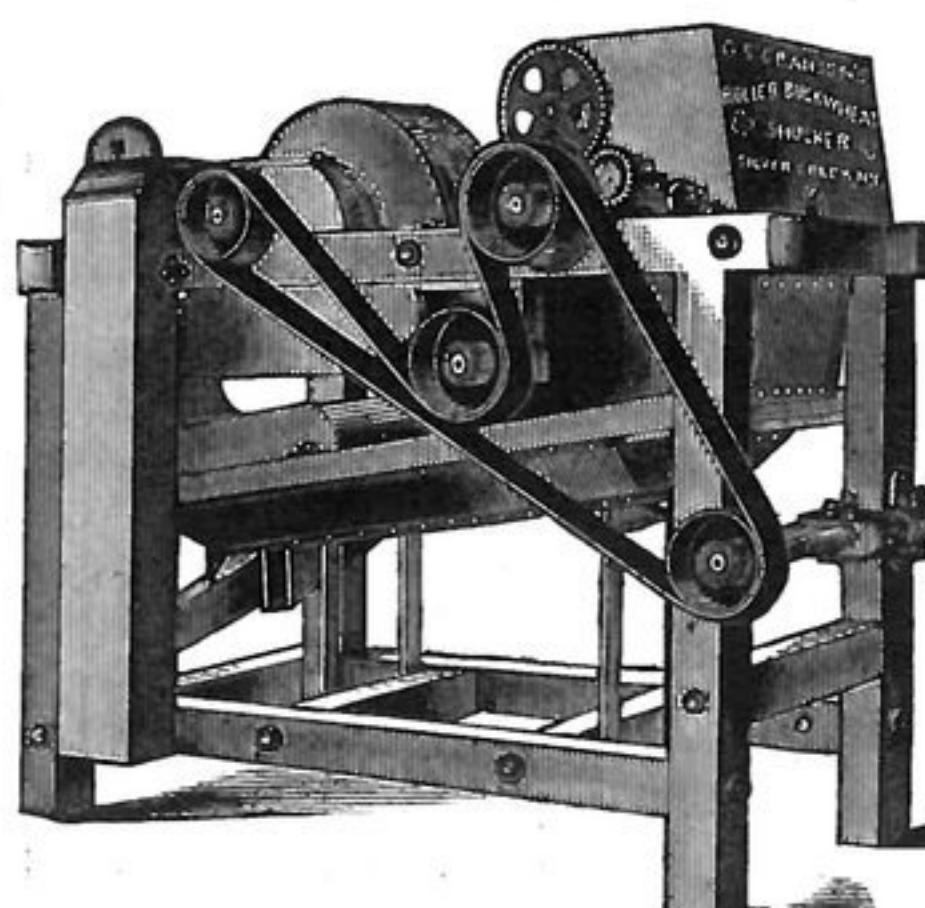


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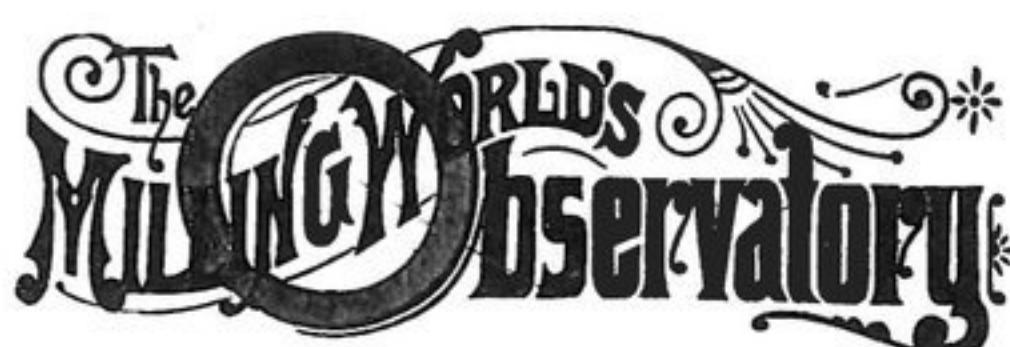
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PENNSYLVANIA MILLERS.

The Pennsylvania Millers' Association met in convention at the Assembly Buildings, Philadelphia, on Tuesday afternoon, October 7. President B. F. Isenberg, of Huntingdon, presided. After the delivery of the president's address, the general business of the convention was transacted. Twelve new members were elected. The treasurer and secretary read his reports. The treasurer's report showed an apparent deficiency of \$37, which led some of the members to suggest, ironically, that the treasurer be placed under bond prior to his going to Canada. It proved, however, that the deficiency was caused by some of the members not having paid up their dues. Mr. Horton, of Chicago, delivered a lecture on "Mill insurance and its extra risks." The officers of last year—President, B. F. Isenberg, of Huntingdon; first vice-president, Jacob Walter, of Easton; second vice-president, Cyrus Hoffa, of Lewisburg; secretary and treasurer, Landis Levan, of Lancaster—were all re-elected for the ensuing year by acclamation. The convention was then, by common consent, turned into an experience meeting, and various experiences were given. Mr. Jonathan Mills, of Chicago, said that he thought they did not know as much about milling as they did three years ago, and that the subject of scientific milling was considerably mixed. The general complaint was "bugs" getting in the "bolt cloth" and destroying it. One miller said that he had paid ten dollars for some "bug medicine," which was guaranteed to kill them, but found that after he had confined a number of them in a can with some of his poison for a week, they were the most lively bugs he ever saw. This led another man to observe that there was another bug annoying the miller—the humbug. Several other subjects were discussed, after which the convention adjourned until 7:30 P. M., when the meeting was called to order. The auditing committee made their report and were discharged. Next in order was the selection of a place for the next annual meeting. Bethlehem was finally decided upon. Mr. John D. Nolan was then introduced, who lectured on the subject of "Milling to-day." Considerable discussion followed the lecture, after which the convention adjourned to meet on the second Tuesday in October, 1885, at the place above named. By special invitation the millers visited the Commercial Exchange in a body, on Wednesday at 11 o'clock. In the afternoon a committee of the Exchange entertained them at dinner at Belmont Mansion, Fairmount Park. President Hancock, of the Exchange, presided, and after the substantials were well washed down with certain fluids, (Schuylkill water having a bad reputation for purity was not used) and some speech making indulged in, the time for departure had arrived, and all boarded the special train, which had kindly been placed at their disposal by the Pennsylvania Railroad Co. The special was run into the old passenger station adjoining the electric exhibition, at which most of the millers spent the evening, and finally wound up at the reception given Gen. Logan, and seeing the parade. Altogether the convention was a success, and the very pleasant time had was largely owing to the kindness of the Commercial Exchange through their committee, and whose courtesies will always be remembered by the members of the Pennsylvania Millers' State Association.

Notes from the Mills.

C. S. Annis, the well-known Georgia millwright, has removed his business from Rome to Atlanta.

The "Kent Mill" at Chatham, Ont., which was burnt some time ago is replaced by a 350 barrel mill.

At the Grand Forks, Dak., elevator 39,033 bushels of wheat were received during the month of September.

At Dodd City, Tex., Oct. 7, B. Dale's flouring mill was burned by incendiaries. Loss, \$8,000. No insurance.

Down to October 1 the movement of freight on the canals of New York was 510,000 tons less than for the corresponding year.

D. Naracong & Co., Evansville, Wis., have ordered an additional set of rolls from the Case Mfg. Co., Columbus, Ohio.

Guthrie & Albritton, millers, Anderson, Ala., have sold out their interests, and have been succeeded by J. B. Albritton.

W. W. & H. K. Woods, having sold out their interests in the Piqua Milling Company, Piqua, O., the company is dissolved.

The style of the Standard Milling Company, Fort Collins, Col., has been changed to the Poudre Valley Milling Company.

J. P. Murphy, Mt. Sterling, Ill., has ordered a patent automatic feed for his purifier, from the Case Mfg. Co., Columbus, Ohio.

Near Montgomery, Ala., Oct. 4, W. C. Joseph lost his steam gin and grist mill by fire. The loss is over \$2,000; insurance, \$1,300.

Goss' new flour mill at South Duluth, Minn., is almost ready for business. It will have a capacity of from 150 to 200 barrels per day.

The flouring mill of W. W. Potts, at Richmond, Ky., was burned Oct. 8, involving a loss of \$66,500, offset by insurance of \$10,000.

At Waynesboro, Ala., Oct. 4, the grist mill and cotton ginnery, owned by S. J. Johnston, was burned to the ground. Loss, \$3,000.

The Case Mfg. Co., Columbus, Ohio, have an order for a patent automatic feed for purifier from F. L. Burdick & Co., of Owatonna, Minn.

The Case Mfg. Co., Columbus, Ohio, have an order from H. Mulzer, Powell, Ohio, for one No. 1 single purifier and one pair rolls, with automatic feed.

At Fort Dodge, Iowa, Oct. 9, L. Blanden & Co.'s flouring mill and machinery, 2,000 sacks of flour, and 10,000 bushels of wheat burned. Loss \$75,000.

The secretary of the Ohio state board of agriculture says the frosts in that state Sept. 9 and 10 destroyed 40,000,000 bushels of corn, and caused a loss of \$15,000,000.

The Case Mfg. Co., Columbus, Ohio, have an order, through Wm. E. Catlin & Co., Chicago, Ill., for one pair rolls with automatic feed, for K. C. Arnold, Truxton, N. Y.

The bread baked from the flour manufactured by Adam Simpson, Owatonna, Minn., who is using the Case roller system, took the first premium at the late Minnesota State Fair.

W. A. Huffman Implement Co., Ft. Worth, Tex., have ordered two pair rolls, and one purifier, from the Case Mfg. Co., Columbus, Ohio, to be shipped to Collins & Black, Ranger, Texas.

At Pocopsis township, Chester county, Pa., Oct. 2, the flour mill of Henry Haines was destroyed by fire, together with the contents. It was insured in the Union Mutual Company, of Kennett, for \$2,500.

Frank Pearson, a prominent pioneer of Washington Territory, and owner of a large flouring mill at Walla Walla, became entangled in the machinery of the mill. His body was crushed and torn to fragments.

Curtis & Paxton, of Addison, N. Y., have been fixing over their mill, and have put in two 56-inch Lesner turbine water wheels, and some other machinery, which was supplied by Wm. B. Wempe's Sons, of Fultonville, N. Y.

About the only thing left intact belonging to the Minnesota Elevator Company by the flood in the Chippewa Valley, was the bridge at Durand, Wis. That stood both the general collapse of the company and the flood of the Chippewa.

There is a great scarcity of corn in Mexico and dealers in the city of Mexico say that the country requires at least 20,000,000 bu from the United States, but freight rates will have to be reduced to bring it within the means of the people.

The Case Mfg. Co., Columbus, Ohio, have secured the contract of P. P. Cline & Co., Gallatin, Mo., for a complete outfit of breaks, rolls, purifiers, centrifugal reels, etc., for a full roller mill on the Case system, using ten pairs rolls.

The grain men of the New York Produce Exchange have started a movement to establish a clearing house for the grain trade. The President was authorized to appoint a committee to examine into the matter, and report to the grain trade at a future meeting.

The Standard roller mills in Holland, Mich., had narrow escape from complete destruction the other day. The building and contents were damaged to the extent of \$15,000. Only the successful working of the water works saved the entire property from destruction.

The experiment of shipping wheat from the Pacific coast by rail is being tested sooner than most people expected. October 1 a shipment of 1,000 tons of wheat was started from San Francisco to New Orleans, over the Southern Pacific route, destined to Liverpool.

A frame flour, saw and planing mills owned and operated by Joseph Hicks, at Patton, Bollinger County, Mo., burnt down about 3 A. M. on Saturday, the 4th instant. A large lot of lumber was also burnt. The loss will exceed \$10,000; no insurance. Cause supposed to be incendiary.

The farmers around Battle Lake, Minn., are dissatisfied with the action of the Northern Pacific Elevator Company in retaining the services of Lawlor, the wheat buyer at that place, and have banded together and pledged themselves to sell no wheat to Lawlor, under a penalty of a \$10 fine.

A car containing a number of barrels made of straw pulp and filled with flour were exhibited at the Norton mills in Chicago a few days since. The barrels were shipped from the seaboard, and are bound for Minneapolis, and from there will be reshipped East, the transaction being experimental. The material is similar to that used in making straw board, and is composed of wheat straw. The barrels weigh about eighteen pounds.

Fred C. Pillsbury, of Minneapolis who has just returned from a trip to Europe says the markets of the different countries are much overstocked with flour, and that the United States would have no export trade to speak of this year with any countries outside of England. The crops have been exceptionally good, especially in France and Germany, and the weather for reaping the harvest had been unusually fine. He is of the opinion that the roller process was being generally adopted throughout England.

The prospectus of the Montreal Terminal Company, through which the Canadian Pacific elevators are to be erected, has been issued. The capital is \$500,000, and one-half will immediately be called up. The investment is secured by the Canadian Pacific Railway Company, which guarantees a dividend of 7 per cent. and undertakes to purchase the elevators at an advance of 5 per cent. on their cost after ten years, taking, in the meantime, a lease of the property. Two elevators, with a capacity of 400,000 bushels, are to be ready by the opening of navigation.

D. K. Hurlbut, of Winona, Minn.; a member of the Dakota Milling Company, which buys wheat at about fifty stations in Central Minnesota and Dakota, says the Milwaukee Sentinel, reports the spring wheat crop in his part of the country as being largely overestimated, while the actual yield has been considerably damaged by smut and rain. Farmers who expected twenty bushels an acre find their yield only about twelve, and many have stacked their wheat for better prices, so that deliveries are light. The soft wheat is the principal sufferer from smut, the hard varieties raised in Northern Dakota being comparatively free. Mr. H. estimates the corn crop of Minnesota at 28,000,000 bushels, and that of Dakota at 15,000,000.

Montreal flour merchants complain that the Ontario millers are sending travelers all over the Maritime Provinces and taking petty orders, even 5 bbl lots from the smallest traders, at the same figures Montreal dealers have to pay for 100 bbl lots. The consequence is, to get even with the millers and to retain a portion of their trade, flour men there are resorting to the ruse of inventing their own brands. It is said the whole trouble arises from the railways giving the millers advantageous through rates even for many petty lots, if shipped together. We doubt if the railways can make more business by this action, so detrimental to commerce, and are quite certain the millers will lose money when they total up the bad debts, always the result of such pushing of business.

At Fairbury, Ill., Oct. 11, B. Walton's mill and the business block adjoining were burned. The fire raged furiously, destroying the stock yards and buildings of Comb & McDonald, the warehouse of Walton Bros., containing a large quantity of grain, and the blacksmith shop of George Westervelt. From this point the fire crept along against the wind to the southward, burning several corn cribs south of the railway, and thence west to Odelt's Check Rower works and planing mill. The lumber office of John Decker and the commission store of J. R. Smith, both in the Arcade Block just across the street from the mill, were also completely destroyed. The loss of Walton brothers on stock and buildings is \$75,000; insurance, \$23,400. Loss on mill and contents, \$35,000; insurance, \$1,000. The other losses aggregate about \$12,000; insurance, \$4,500. The mill was originally built by Benjamin Walton, brother of the Walton Bros., who sustain such heavy losses in this fire, in 1878. It was destroyed by fire and rebuilt by Mr. Walton in 1879. Since that time it has narrowly escaped fire on several occasions, the last time previous to its final destruction having occurred about eight or nine weeks ago. About six weeks ago Walton Bros. purchased the mill of Benjamin Walton, and have been operating it since to its fullest capacity. The fire when discovered was located in the cobs in the engine-room, and gained such headway before anything could be done that there was no help for it. The wind, which was but a light breeze at first, increased until it blew a gale, and the flames were

driven along at a rapid and destructive rate. There seemed to be a remarkable lack of disposition to turn in and put out the fire. Only a few did any active work. Thousands of dollars' worth of property might have been saved with very little effort. The corn-cribs and checkrower factory on the south side of the railroad were uselessly destroyed. A little work there just as the fire started would have saved them.

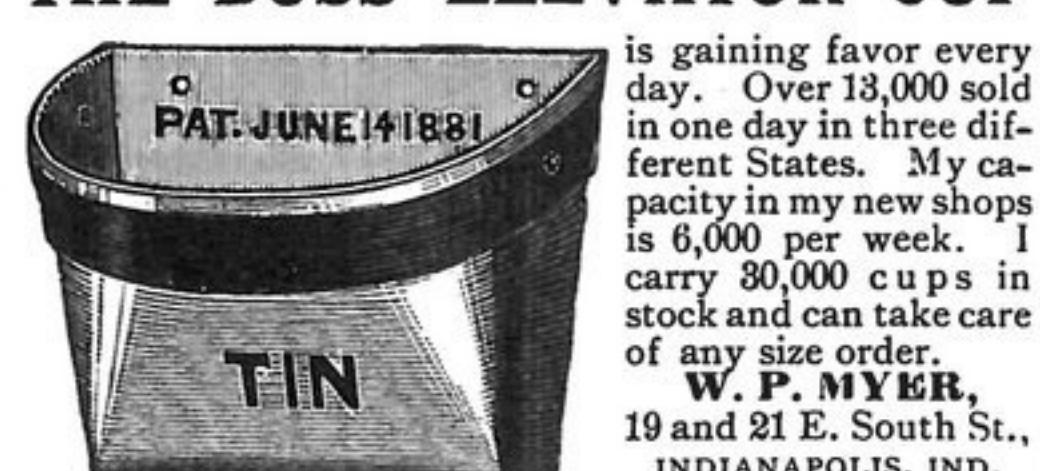
The millers of Minneapolis, says the *Pioneer Press*, had nothing to do with establishing the Northern grades at Duluth. An attempt was made to establish those grades, it is claimed, are in favor of Northern wheat raisers, as it puts a premium on the superior wheat of that section, which has always been classed with the grades of Southern wheat, which contain less of the hard varieties. These new grades of Northern sell for more than the regular grades of No. 1 and No. 2. The inspectorship is not a one man power in any city. Appeals may be taken from the inspector's decision to the committee on appeals. Mr. Jacob could have obtained a re-inspection of his grain if he was not satisfied, and if still convinced that he was wronged, an appeal to the committee on appeals was open to him. It is not unusual that wheat raised in the same field grades differently.

The steamship Kairos was cleared September 30 at the New Orleans custom house, and proceeded to sea under circumstances that challenge the attention of the public. The Picayune says: The ship was loaded with great expedition in order to fulfill contracts for shipments in September. The loading was done by the floating elevator, "Gov. Morton," belonging to the New Orleans Elevator Company, and was accomplished in thirty working hours, including frequent delays caused by unfavorable weather. In the brief time mentioned there was placed on board the Kairos 62,544 bushels of wheat and 52,026 bushels of rye, making a total of 144,570 bushels of grain. Of this grand total 98,778 bushels were in bulk and 45,793 bushels were in 19,000 sacks. It is believed that this is the largest cargo of grain that was ever cleared from an American port; at any rate it is certainly the largest ever cleared from the port of New Orleans. The whole made a cargo of 3,800 tons.

"Dirty" wheat is making trouble in the Northwest. The growers complain that the elevator men charge too much "dockage" up against them, while the latter retort that the condition of the wheat warrants such charges. The present crop is said to contain more dirt and foul seed than any ever raised in that section before, but it is contended that it is impossible for it to shrink five pounds in the bushel in cleaning—the average of the elevator dockages. The bulk of the crop is dirty when brought to Fargo, Moorhead, and the other stations in the wheat-growing region, where it seems it is not unusual for twelve or even fifteen pounds in each bushel to be thrown out by reason of inferior grading. This is in the proportion of twenty to twenty-five per cent. of the grain received. But the shrinkage does not stop there. On arriving at Duluth and Minneapolis the grain is still found to be so dirty that it is subject to an additional dockage, arrived at from the average results of recleaning. The system of inspection is somewhat at fault, but the farmer is also accused of carelessness in selecting his seed and preparing his crop. This was a year when grades were expected to be exceptionally high, but it seems true that the quality of the wheat has been allowed to deteriorate by careless cultivation. There is much uncertainty in the matter of grades, owing to the differences in the local standards from which the inspector at the central market has to strike an average; owing to the competition between Minneapolis and Duluth; and owing, finally, to the doubt which must always linger in the inspector's mind as to the effect of recent injuries to the grain, the extent of which has not fully developed at the time of inspection. The uncertainty makes the elevator men disposed to exact a very wide margin of dockage—a too wide margin, the farmers think. It is not unlikely that the growers, elated with the commanding position of their industry, have allowed themselves to become quite as careless as is charged. That they feel independent of the market men is shown by the way in which they have been holding back the crop in anticipation of higher prices. The heavy, and as they consider, unjustifiable, scaling down of their season's profits at the elevators intensifies this tendency to holding back. A State inspection is proposed as a remedy for the present unsatisfactory condition of affairs. Both handlers and shippers would probably at first resent any interference, but the suggestion seems a hopeful one, and if the Minnesota people would maintain the reputation of their distinctive product (No. 1 hard Duluth) abroad some such expedient must be resorted to.



THE BOSS ELEVATOR CUP

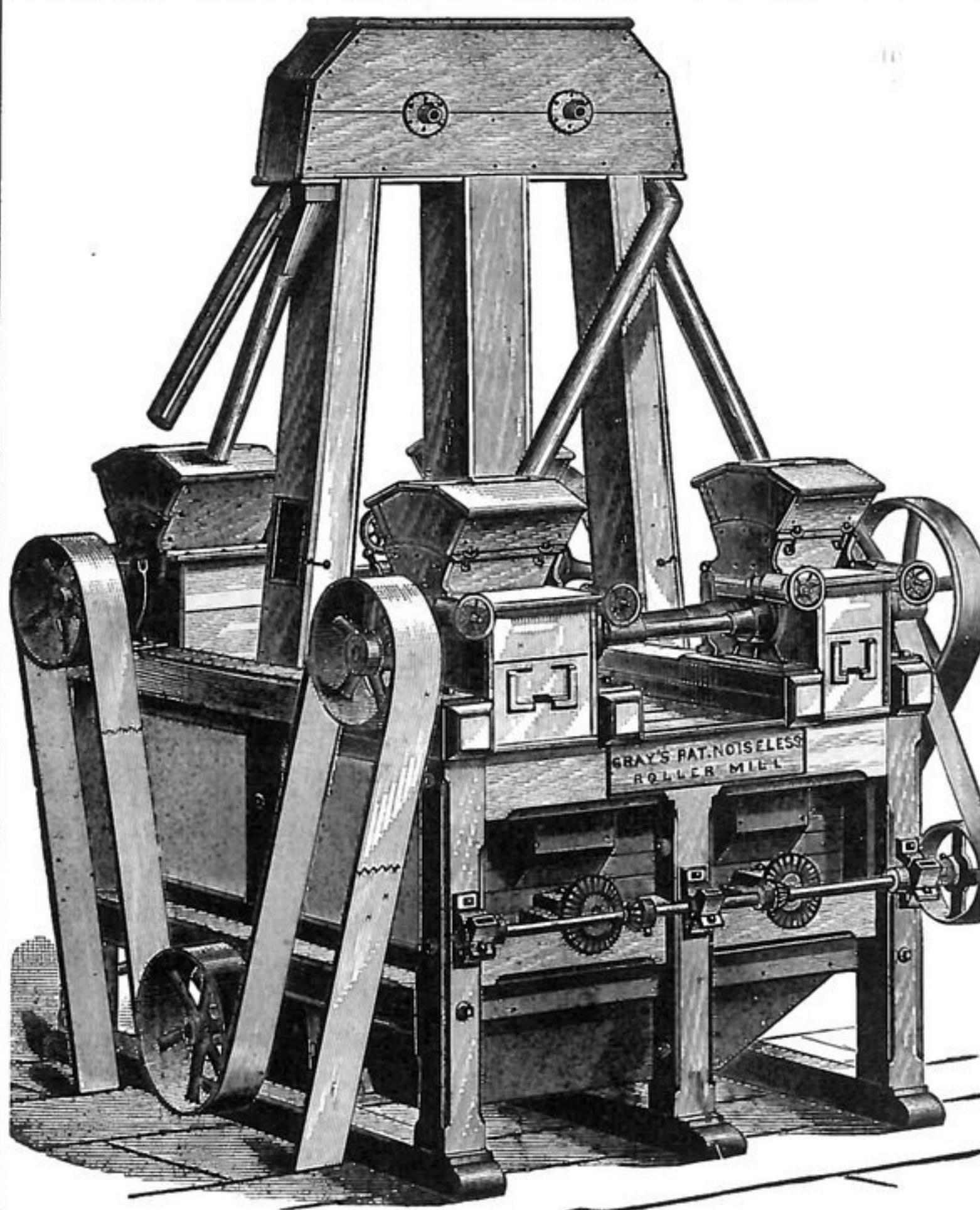


is gaining favor every day. Over 13,000 sold in one day in three different States. My capacity in my new shops is 6,000 per week. I carry 30,000 cups in stock and can take care of any size order.
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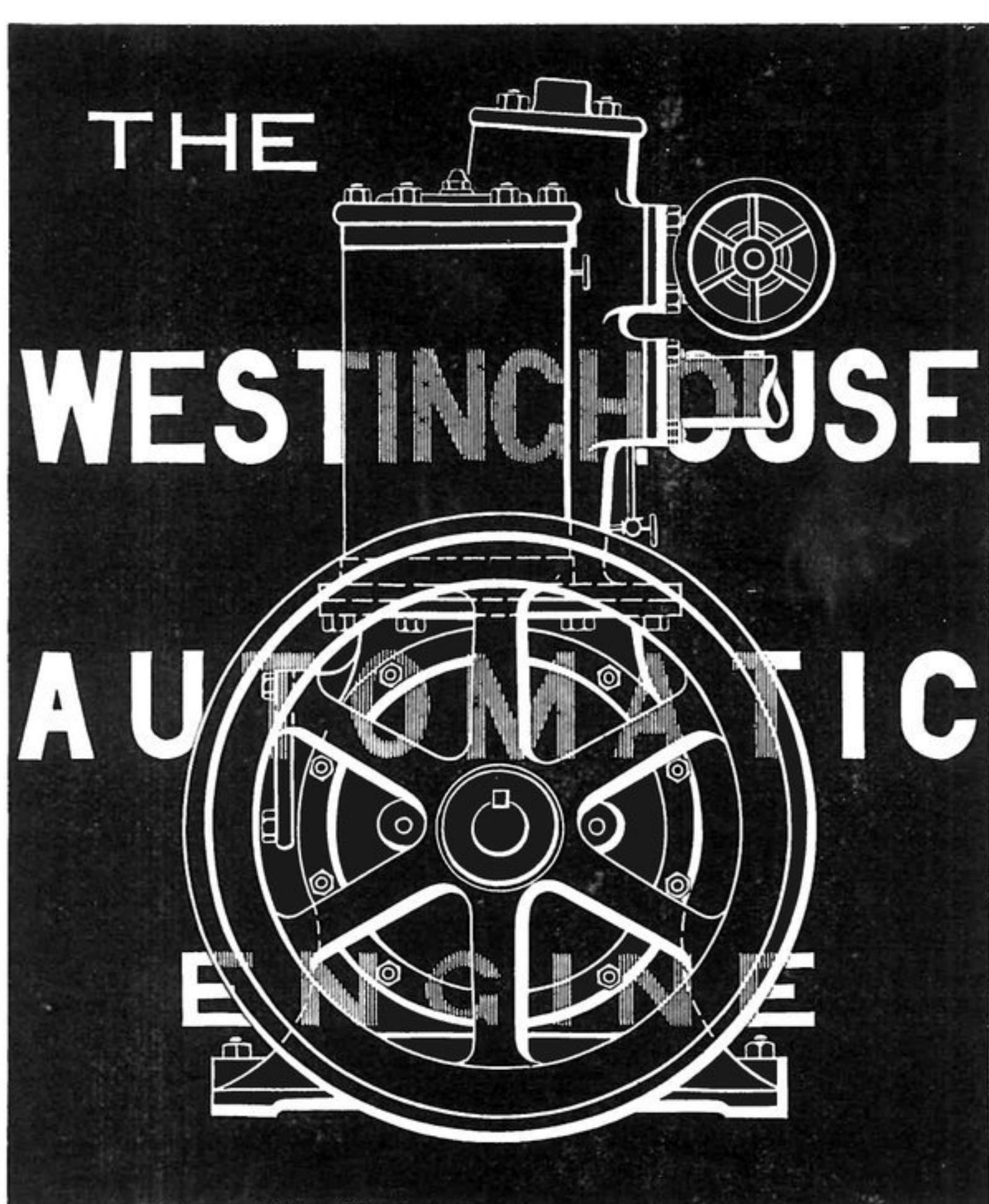
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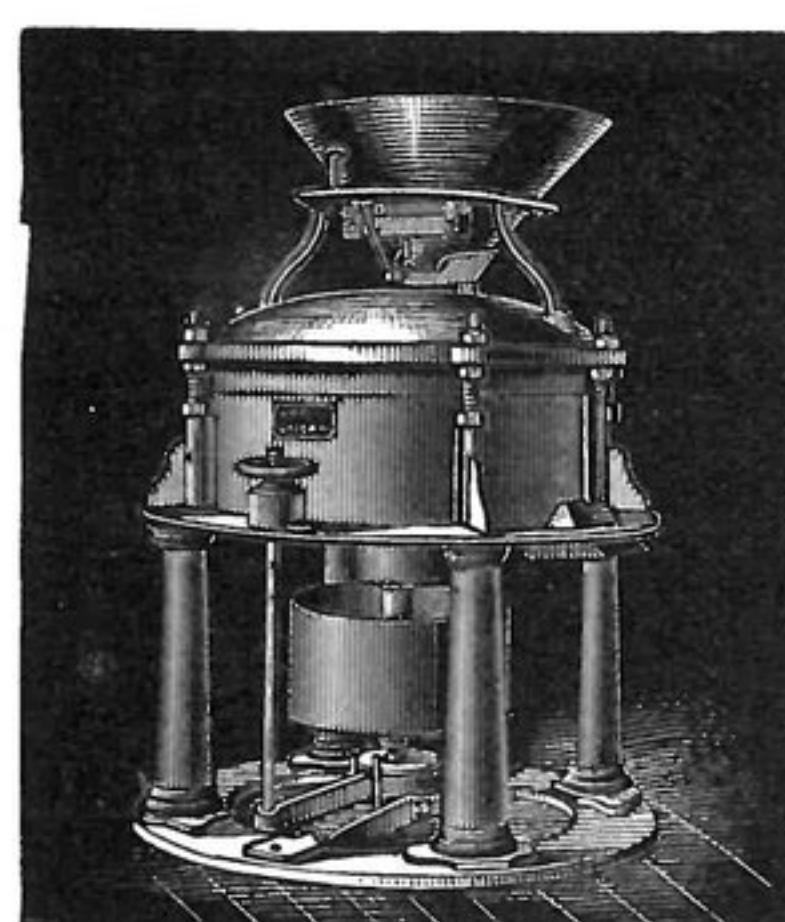
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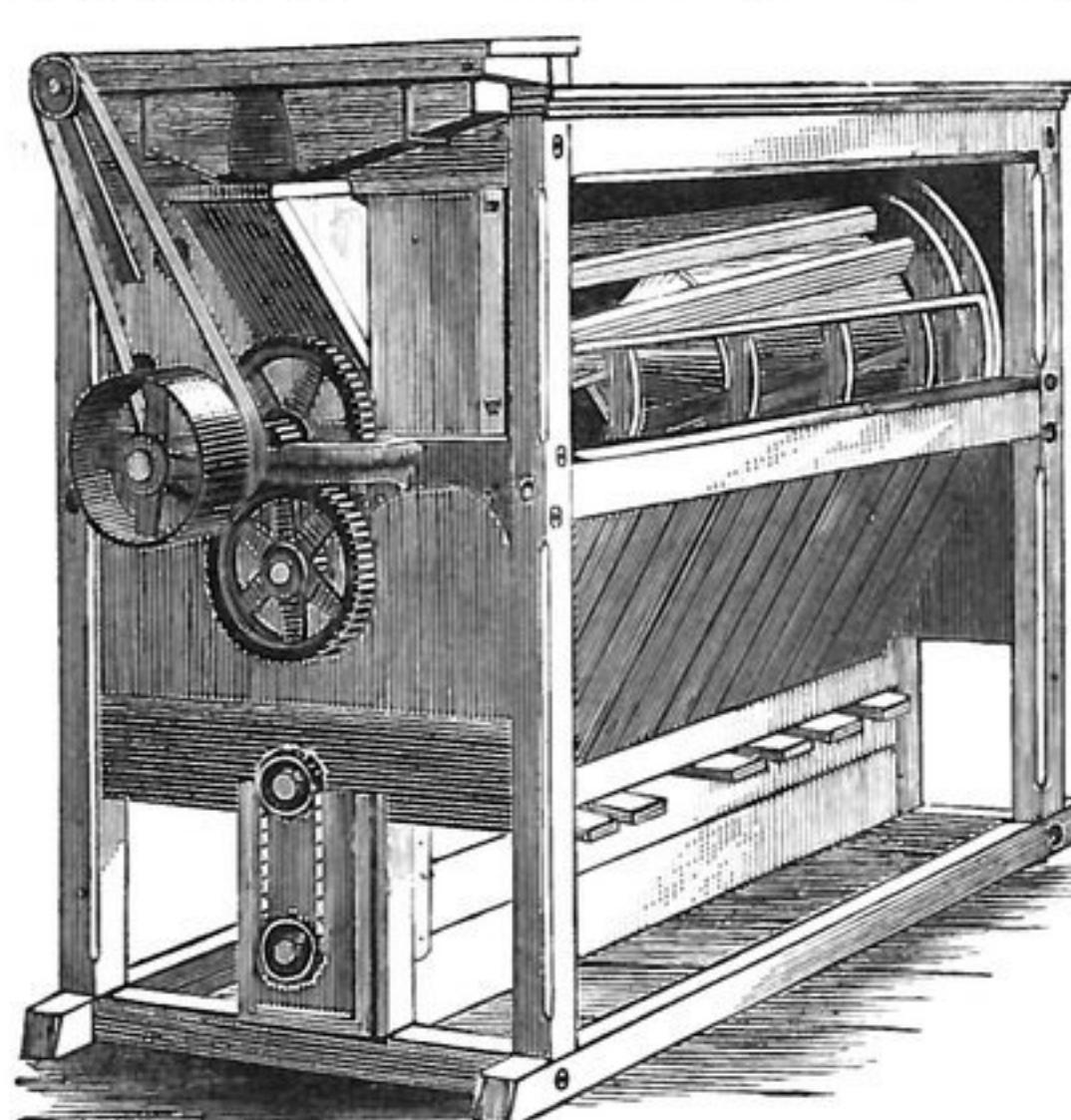
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IS BEYOND QUESTION THE
BEST IN THE MARKET
AND IS SOLD FOR
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While the operation of every
Machine is
FULLY GUARANTEED.

Send for Prices, Lists of
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READ THIS LETTER. THEY WILL DO AS WELL FOR YOU.

MR. C. N. SMITH.
We have been running the two Centrifugals since February, the first without any stop whatever, and are well pleased with them. We throw less stock on our Rolls, and make four to five per cent. less Low Grade than before we had the Machine. You can refer any one to us and we will be pleased to give it a good send off. Wishing you success, we remain,
Yours respectfully,
CHAS. S. DURST, Supt.
CHAS. SHUEY, Head Miller.

MANUFACTURED ONLY BY

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IRISH MILLS.

THE special correspondent of the Times, writing from the West of Ireland, and speaking of Galway, says; "Trade has revived again comparatively recently; and though the citizens are now lamenting their vanishing prosperity, at the first glance to the eye of a stranger there is a certain amount of bustle in the place. There are ships and a steamer or two unloading at the quays, there are blocks of great warehouses, which may be filled or empty, and the view from the bridge which carries the main street across the Corrib is picturesquely suggestive of the predominating industry. A rapid side stream meets the broad current of the main river; an enormous meal mill stands on the promontory between, while sundry similar establishments of nearly equal pretensions tower over the tops of the houses in the middle distance. In the backwater, between the double currents, an angler immersed almost to his waist is whipping out the small river trout which are flinging themselves several feet out of the water around him. And between the bridge and the pool where he is cooling his legs, long narrow gardens run down to the river from the back of a row of ancient mansions, each garden having its own water-gate, with a flight of steps leading down to a landing place. Until lately, there was seven or eight of these mills, all doing a flourishing business. Besides their staff of clerks, book-keepers, &c., they employed about 300 ordinary hands. The wheat they ground was imported from all parts of the world, to be distributed through Galway to the adjacent country;

but the times have changed with the arrival of enterprising intruders.

Americans and Australians preferred to send flour in place of wheat, the flour in freight occupying only one-fourth of the bulk of the unground grain; while they did the grinding at home, and kept what the trade calls the offal. The marked diminution in the home supplies of offal alone has been a very serious loss to the numerous peasants and pig breeders of the neighborhood. Formerly they could buy it at 3s. 6d. per cwt. at any of the mill; now they must pay at least double the money. Moreover, the increasing importation of the foreign meal has been cutting the ground from under the feet of the mills. One of them has closed its doors already, and the others are apprehensive that they will soon have to follow this example. Nor do they even compete for the purchase and distribution of the foreign importations, which seem to have been monopolized by the great Belfast house of Richardson, whose name I have read on enormous warehouses, not only here but in Ballina and Sligo. It might be presumed that the impending stoppage of these mills would be a black look-out for the poor people to whom they have hitherto given employment. But strange to say, the demand for labor here has latterly been in excess of the supply.

IRRIGATION WORKS IN ITALY.

The irrigation system of Italy is probably the most complete in the world, and still it is constantly being increased; it forms a part of the elaborate system of defence against floods necessitated by the conformation of the Northern Provinces. According to the latest official statistics, the irrigation canals of Piedmont alone give 125,550 gallons per second, distributed over 1,340,000 acres, and those of Lombardy 95,355

gallons per second, distributed over 1,680,400 acres. The great works have not been, comparatively speaking, expensive. The Cavour canal, constructed within the last few years, draws its supply from the rivers Po and Dora Baltea. It gives a flow of 29,200 gallons per second, waters nearly 40,000 acres, and cost £1,600,000, about £32,200 per mile. It was constructed in four years, and measures are now under consideration for increasing its debit by 5,300 gallons per second. A smaller canal, subsidiary to it, gives 18,540 gallons per second, and cost £24,154 per mile.

The largest canals are the Cavour, and its subsidiary canal just mentioned; the Muzza, and Agliano and Naviglio Grande. The smaller of these gives 13,200 gall. per second. Below this point the canals become very numerous, and interspersed all over the country. These canals are not only used for purposes of irrigation, but also to supply motive power, by which again the water is raised to districts lying upon a higher level. On the steep slope of the Dora Baltea, not far from Turin, three canals (the Torea, Agliano and Roto) flow parallel to each other, on different levels, while the water is used at the top of the hill, 62 feet above the highest of them. The arrangement adopted is as follows: A stream of 154 gallons per second is diverted from the Torea canal, and carried down the hill in a leaden pipe, until it meets the Agliano Canal. Here it is pumped up to the summit level by eight pumps, worked by four turbines, driven by a fall of water taken from the Agliano canal, and allowed to flow down into the Roto. By joining this latter it is used for irrigation, thus not a drop is wasted. The great principle of Italian engineers is to work on a large scale, thus attaining at the same time efficiency and economy, avoiding constant alterations and additions;

and it is by such means that the extraordinary fertility of Northern Italy is produced and maintained.

NOTES.

The decline of receipts at the custom houses of Italy, owing to the prevalence of cholera, is estimated at \$8,000,000.

A large flour mill, called the Barnabe Mill, situated near Perigueux, France, and where there was also a considerable amount of grain stored, was completely destroyed by fire on the night of Sept. 15th. The losses, it is said, amount to over £30,000.

Of German flour the exports during the month of July amounted to 108,675 qntls, against 103,231 qntls last year; 38,730 qntls were sent to Great Britain, and 29,420 qntls to Norway and Sweden. On the other hand 30,433 qntls were imported from Austria-Hungary.

M. Ferry, recently received a deputation of agricultural delegates from the Department of Aisne. Replying to their request that in France the import duty on foreign cereals might be raised, M. Ferry declared that the Government would not take the initiative in such a step.

Japan's meteorological system now comprises twenty-three observatories in the most important places throughout the country. From each district three weather reports daily are sent to the central observatory at Tokio, where they are prepared for publication by the leading journals of the seaports.

Mr. H. Simon, of Manchester, has recently started, in the north of Ireland, a roller mill plant in a small water mill, which he has recently converted to the roller mill system, which contains, probably, the smallest roller plant in the world, namely, to make from 1 to $1\frac{1}{2}$ sacks per hour. The plant has turned out eminently successful, and is doing excellent work and producing vastly superior results to the stones. One pair of the old stones and three of the reels have been utilized, so that the success of this experiment assures even the smallest country millers of a cheap and effective mode of converting their mills to the roller system, a fact which has long been doubted by many.

TWO GOOD MILLS.

D. F. Robinson and W. H. Tenney &
Son, both of Georgetown, District of Colum-
bia, have each just changed their mills to the Roller
System. They have a full line of Bismarck Rolls, Case
Purifiers, Case Centrifugal, Scalping, and Bolting Reels. Capacity 250
barrels each. Any miller who wishes to know how our machinery works
or how our system of separations and arranging a mill works, are re-
quested to write to either of the above-named courteous gentlemen for
their opinion. They will get nothing but the truth and facts from either
and no stronger advertisements than these could be written
of the merits of the Case Machinery.

**CASE MANUFACTURING CO.,
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JONATHAN MILLS UNIVERSAL FLOUR DRESSER.

Guaranteed to be superior to any other bolting device for clear, clean bolting or reboiling of all grades of Flour.

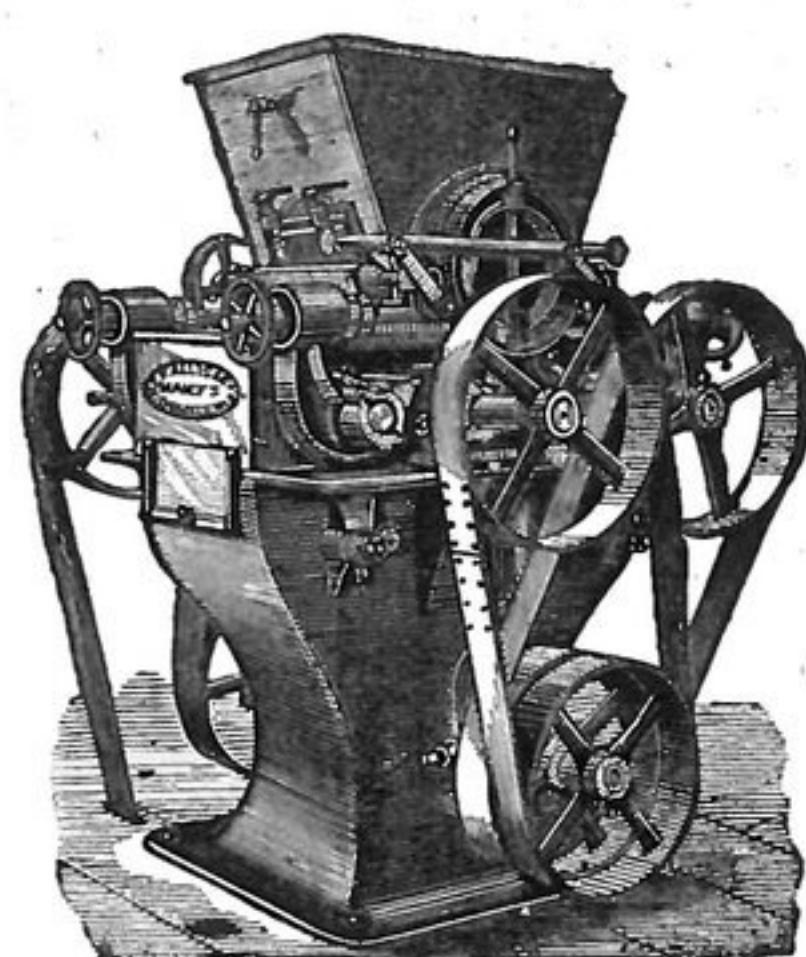
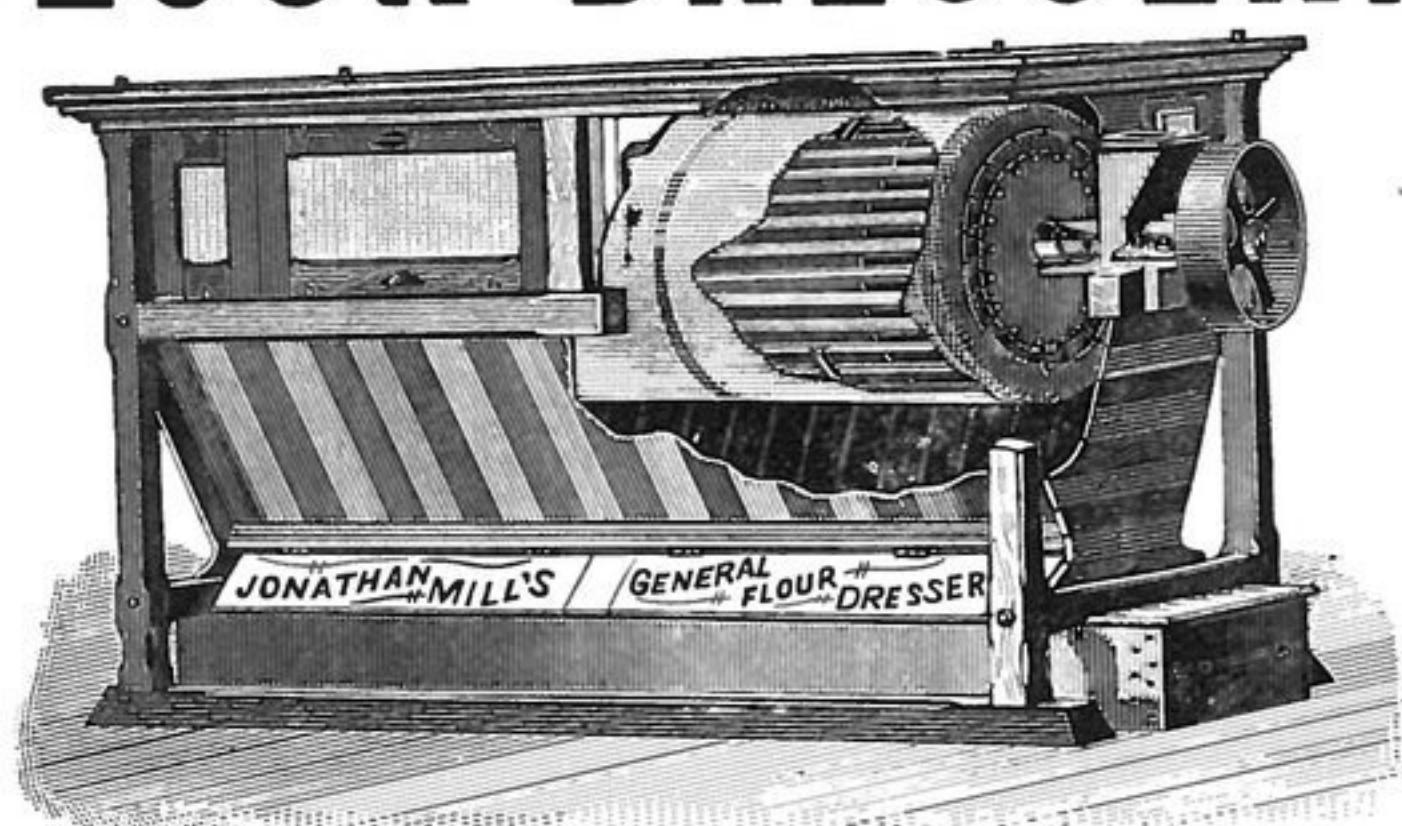
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SLOW SPEED. OCCUPIES SMALL SPACE, AND HAS IMMENSE CAPACITY.

For Price List, Sizes, and Dimensions, Send to

THE CUMMER ENGINE CO., CLEVELAND OHIO.

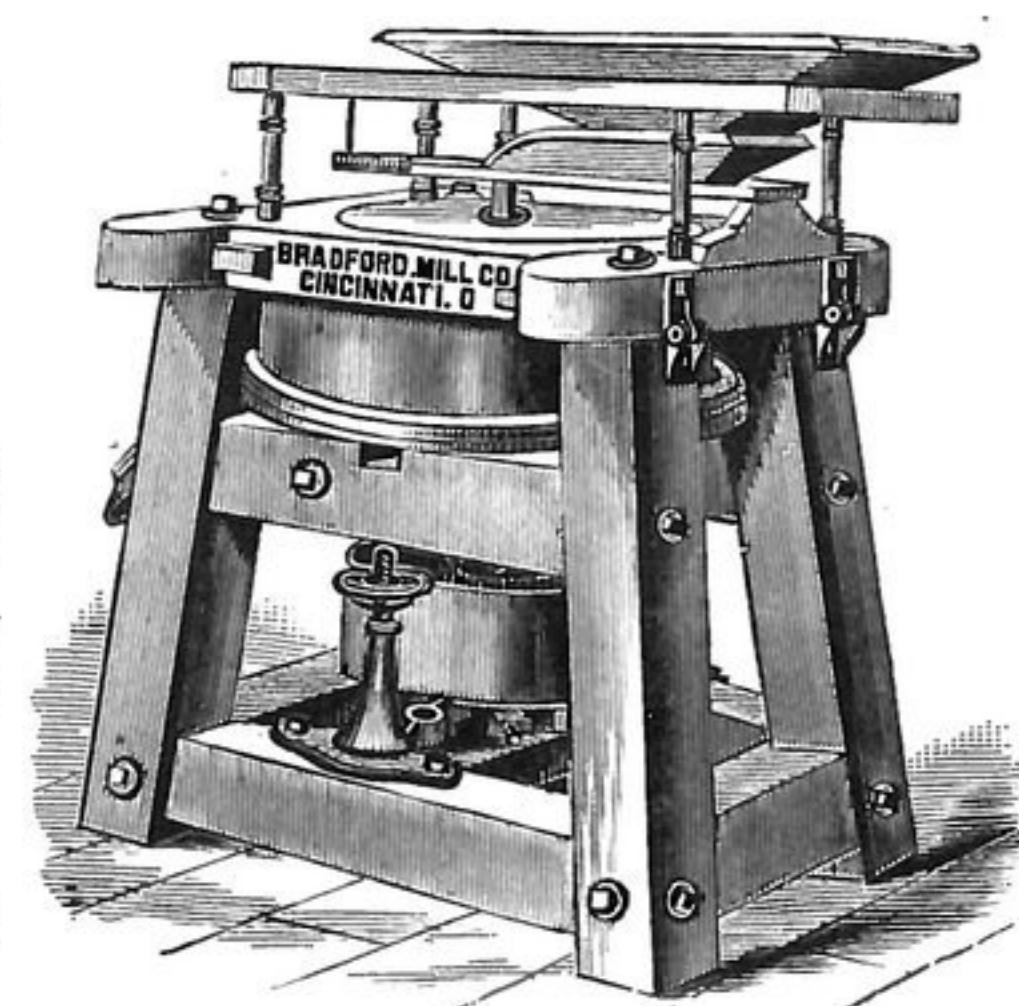
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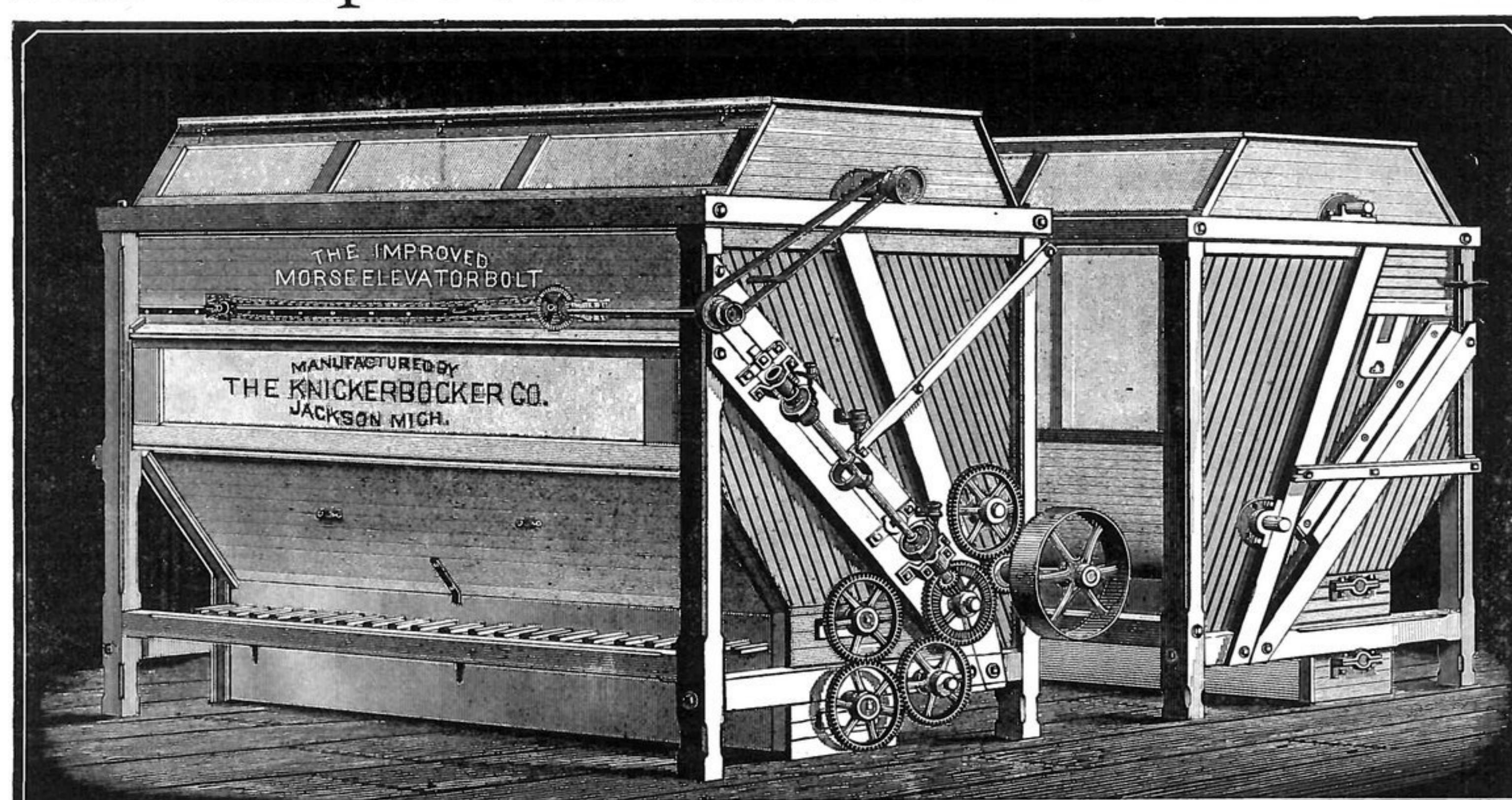
Manufacture a Complete Line of
FLOUR MILL MACHINERY,
Including Portable Corn and Middlings Mills.

RE-GRINDING AND RE-CORRUGATING
PORCELAIN ROLLS
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Re-Ground and Re-Corrugated.



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The Improved Morse Elevator Bolt.

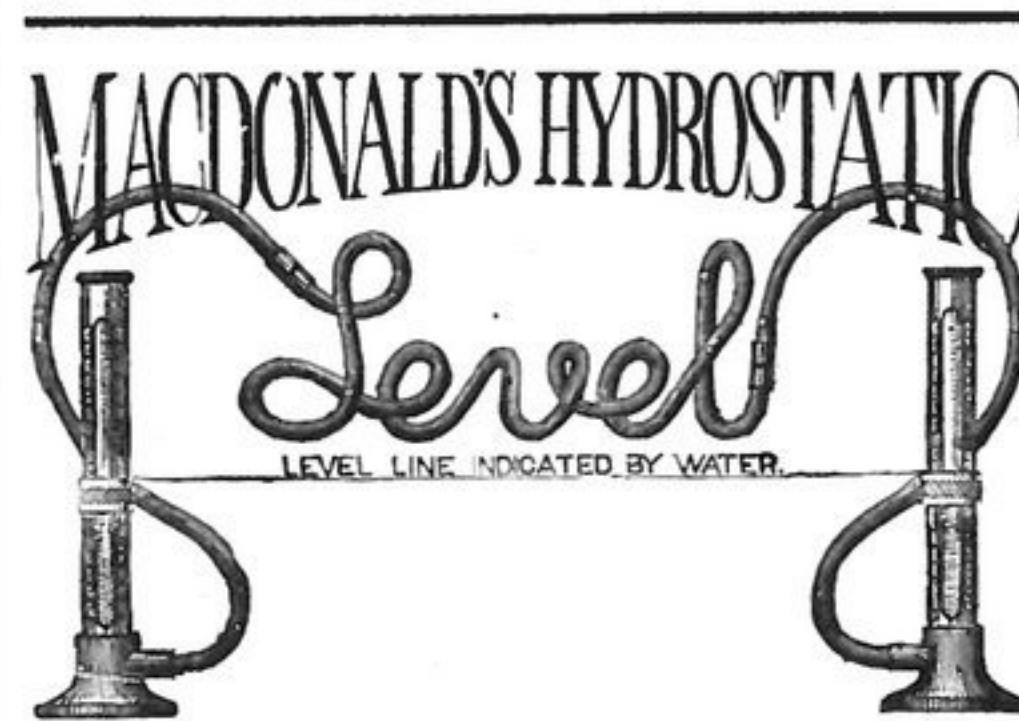


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THE KNICKERBOCKER CO., JACKSON, MICH.



A tool for Cutting, Leveling and Polishing the Furrows and Face of Millstones.
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Received the highest and only Award given to Polishers at the Millers' Exhibition, Cincinnati, Ohio, June, 1880.
For facing down high places on the burr, this tool has no equal, and can be done much better and in one-sixth the time than with the mill pick. It is much larger, cuts better, can be used on either face or furrow, can be used until the corundum is entirely worn out on one side and then turned on the other side. Has over four times the amount of corundum and when the corundum is worn out can be replaced in the handle at a small cost. Sent by express, \$3.50. Satisfaction guaranteed, or money refunded. Address
HORACE DEAL, Bucyrus, Ohio



For leveling shafting it is invaluable. Applied to any two points regardless of distance and obstructions that may be between. Send for circular.

Jas. Macdonald, 55 Broadway, New York.

CAREY'S DOUBLE ANCHOR BOLTING CLOTH

Best in the Market. Every Yard Guaranteed Always up to Standard Count.



SOLID COTTON BELTING. MILL PICKS.

FINE FRENCH BURR & ESOPUS MILLSTONES

BELTING.
PORTABLE MILLS.
SMUT MACHINES.

ELEVATOR BUCKETS,

BRUSH MACHINES, AND
MILL FURNISHINGS GENERALLY.
Send for Catalogue and Price List.

SAMUEL CAREY, 17 Broadway, NEW YORK.

HAS BEEN AWARDED
FIRST AND ONLY PREMIUM
AT THE
Millers' International Exhibition.



Office of THE MILLING WORLD.
Buffalo, N. Y., Oct. 15, 1884.

The marketing of wheat by the farmers is still of the freest character, and stocks are rapidly accumulating with an absence of commensurate demand from exporters. Europe maintains a great deal of steadiness in reported prices, but fails to send orders to buy, to hold the American markets. The exports last week were the smallest reported since the new crop began to move. There was an accumulation of stocks of No. 2 at New York of 511,000 bushels; and the total stock afloat and in store, increased in the neighborhood of 1,000,000 bushels. Stocks at the other seaboard points also increased. There was an accumulation of about 1,300,000 bushels at seven out of the eight primary markets usually considered in the interior movement. There may have been some decrease of the amount of wheat *en route*, but the "visible" is expected to show a heavy increase. The interior movement for Monday reached a total of 1,901 cars, or about 950,000 bushels. Before the size of the receipts was known, the market was quiet. After the receipts were telegraphed there was a rush to sell, and the market became active and semi-panicky. Long wheat was thrown on the market in considerable quantities, and receivers were selling against purchases of cash at the West. Cash wheat was in fair demand for export at 3/4@1/2 decline.

The New York flour market has been irregular, and rather easier, reflecting the depression in grain circles. Prices have been especially heavy for medium grades. Receipts are rather free of these grades. Old spring wheat flour was steady. New spring wheat flour was sluggish. The lowest grades were comparatively firm, as they are rather scarce, and purchases have been made for feeding. Bag meal was quiet. Cornmeal was steady. Buckwheat flour was fairly active, and about steady. Rye flour was steady.

FOREIGN EXCHANGE.

Fairly steady in tone, but without much activity or new features. Posted rates closed at 4.82 for sixty days' and 4.85 for demand. The actual rates ranged: At sixty days' sight, 4.81 1/2@4.81 1/2; demand, 4.84 1/2@4.84 1/2; cables, 4.84 1/2@4.85, and commercial, 4.79 1/2@4.80. Continental exchange quiet; francs, 5.23 1/2@5.22 1/2 and 5.20 1/2; reichsmarks, 94 1/2 and 95; guilders, 39 1/2 and 40 1/2. The closing posted rates were as follows:

	60 days.	30 days.
London.....	4 82	4 85
Paris francs	5 21 1/2	5 18 1/2
Geneva	5 20 1/2	5 18 1/2
Berlin, reichsmarks.....	94 1/2	95 1/2
Amsterdam, guilders.....	40	40 1/2

BUFFALO WHEAT MARKET.

Buffalo, Oct. 15, 1884.

Our grain market is very dull and depressed all around. Receipts of wheat are large, and stocks accumulating at all points east and west. Prices favor buyers, but speculators don't appear to have any confidence in an advance until early spring, when some calculation may be made on the prospects of the next harvest. No. 1 hard Duluth sold to-day at 83c. cash, and to arrive. This would appear very cheap for this wheat, but there is a large crop that must find a market east, and New York exporters are only offering 87c. for it, so, in fact, Buffalo is two cents per bushel higher than New York. We quote No. 1 hard Duluth 83c.; No. 2 hard 79c.; No. 1 Northern 78 1/2c.; red winter wheat held at 85c. for No. 2, though sales have been made at 83 1/2@84c. No. 1 white sold at 83 1/2c.; lower grades are offered at 78@79 1/2c. Corn is in fair demand for car-loads, and No. 3 selling at 53c. There is no straight No. 2 for sale here, but what is called No. 2 selling at 57@57 1/2c. Oats very little doing. No. 2 white offered at 32 1/2c. Very little doing in barley; a few of our maltsters have commenced malting, but are taking a low grade of western barley expecting lower prices for Canada and State later in the season.

JAMES S. MCGOWAN & SON.

BUFFALO MARKETS.

FLOUR—City ground clear Northern Pacific spring \$4.75@5.25; straight Northern Pacific spring, \$5.25@5.75; amber, \$5.25@5.35; white winter, \$5.00@5.50; new pro-

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FIRST AND ONLY PREMIUM
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PURCHASE ONLY
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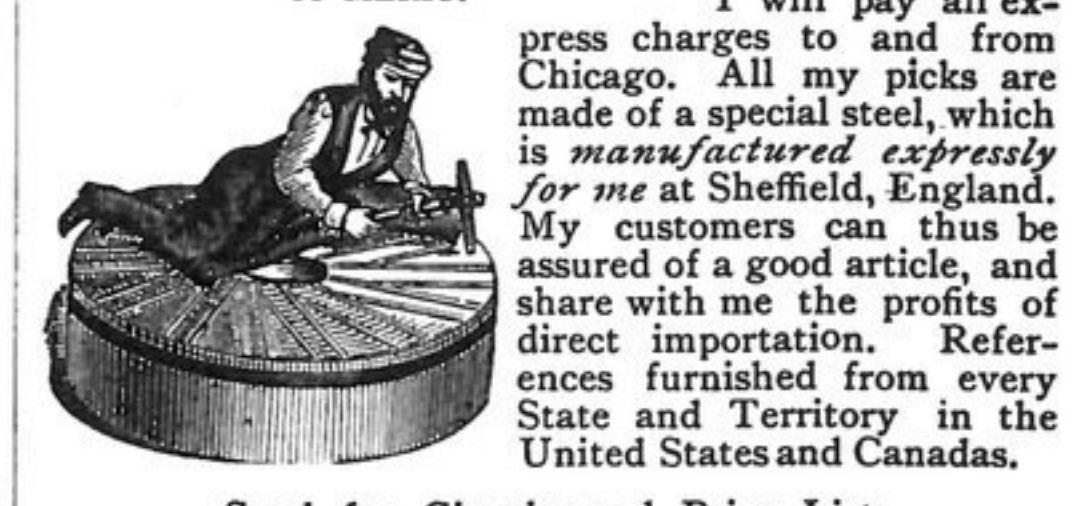
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Picks will be sent on 30 or 60 days' trial to any responsible Miller in the United States or Canadas, and if not superior in every respect to any other pick made in this or any other country, there will be no charge, and I will pay all express charges to and from Chicago. All my picks are made of a special steel, which is manufactured expressly for me at Sheffield, England. My customers can thus be assured of a good article, and share with me the profits of direct importation. References furnished from every State and Territory in the United States and Canadas.



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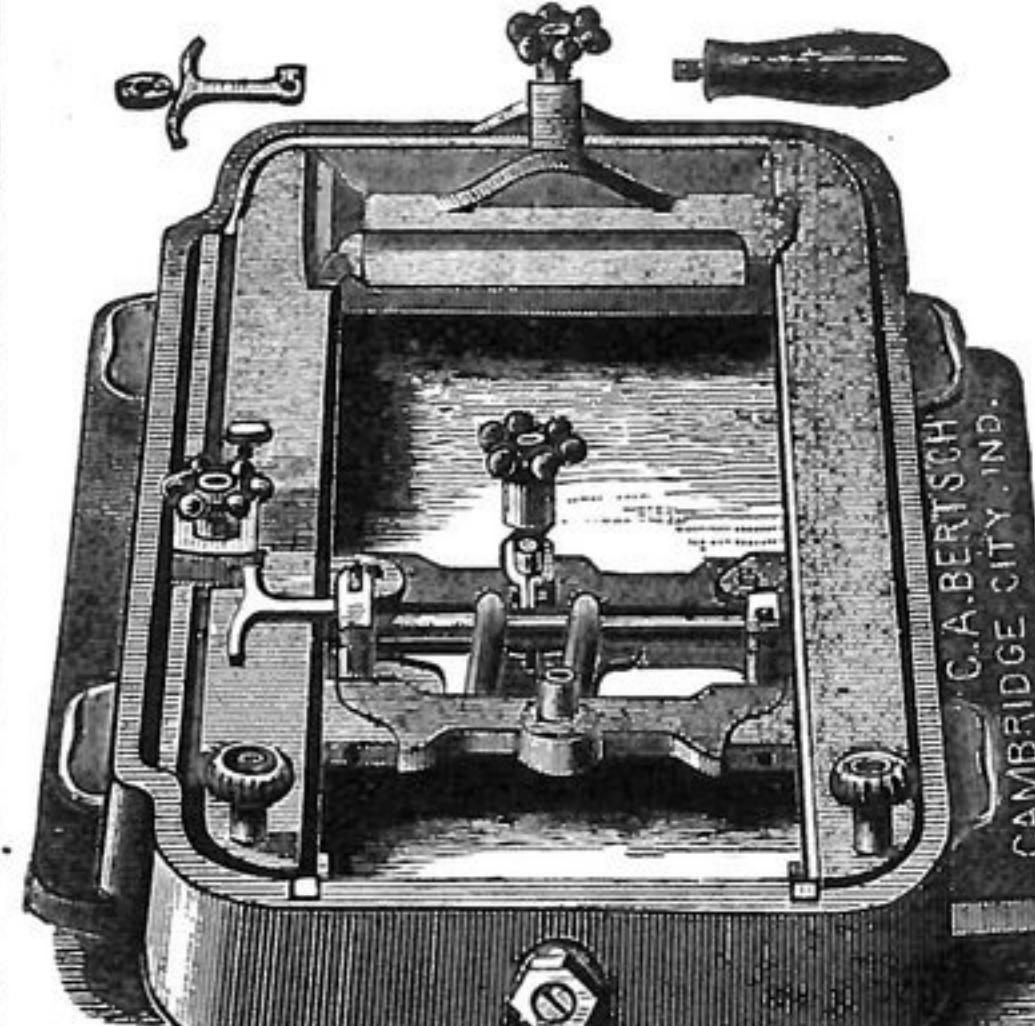
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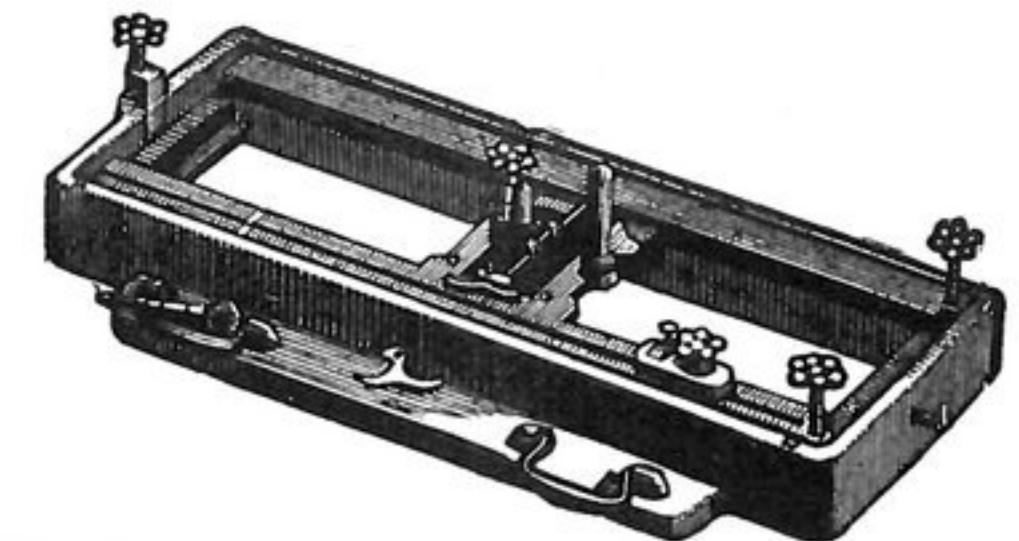
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The A Machine. 29 inches long, 18 inches wide. Weight, 140 pounds. Same width carriage as the B machine.

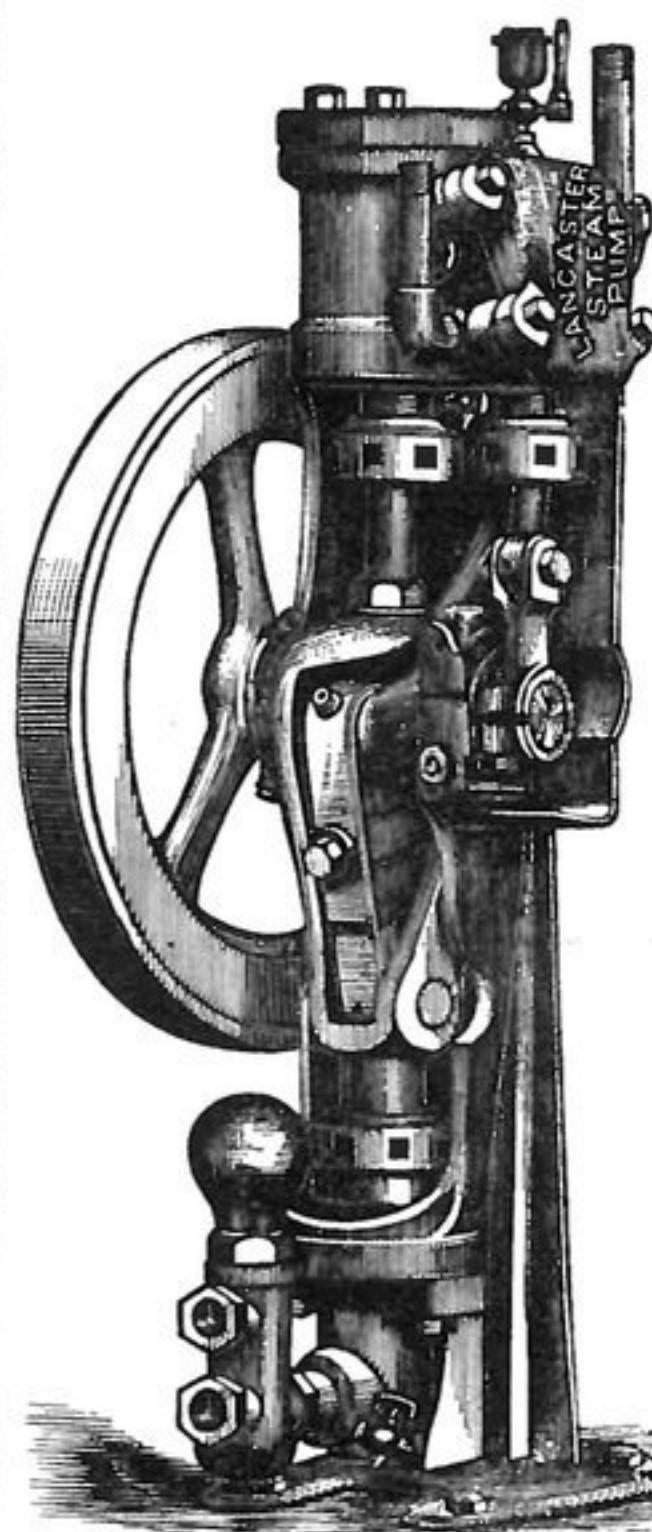


The B Machine. 33 inches long, 19 inches wide. Weight, 165 pounds.

Automatic rod feed. A Revolution. Will cut over 1,000 cuts per inch, right or left, with one or two diamonds for facing. The only practical feed, especially for deep facing, once going over. No tools required; will warrant better satisfaction, and more work of all kinds can be done with less trouble than with others. The best of references given. Mechanics are much surprised as to their merit, and say it is "A Revolution." There has never yet been a call for repairs for any one machine. Have been in operation for over four years. Also a Perfect Diamond Holder. See a machine shown by Thos. Bradford & Co., Exposition, Cincinnati, Ohio. Full descriptive circulars forwarded. Mention this paper.

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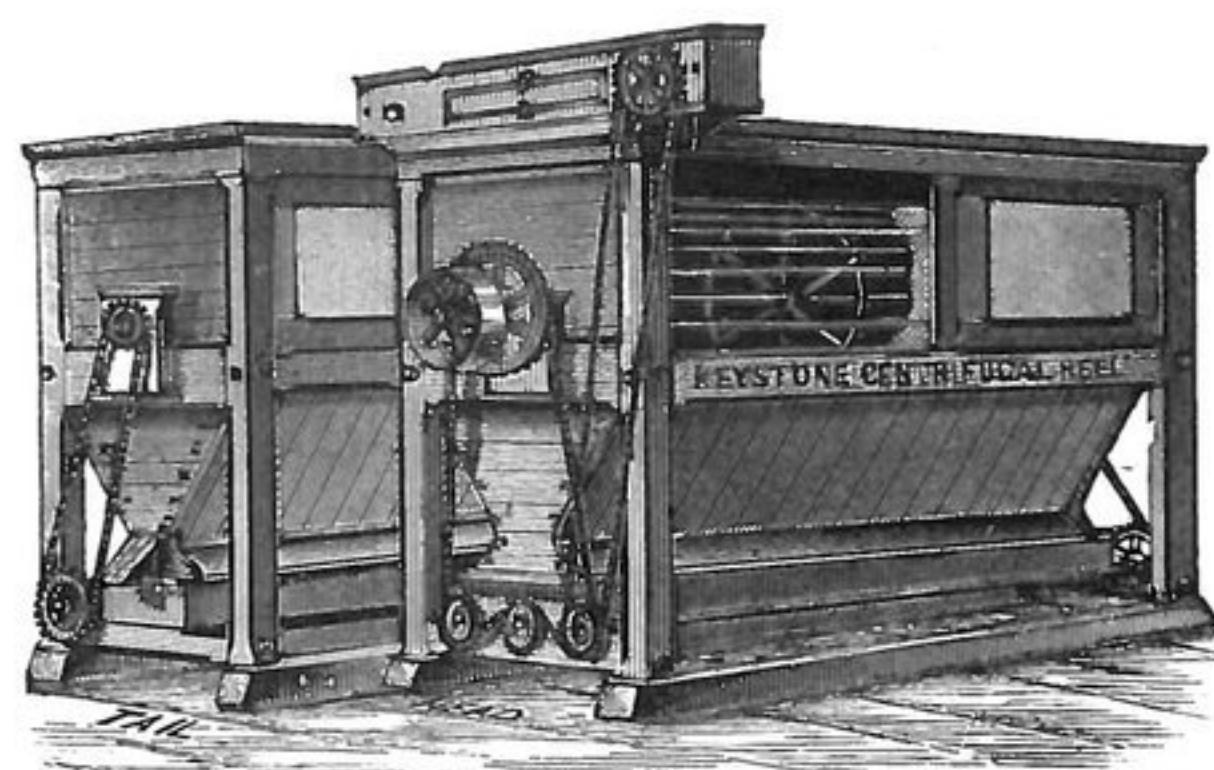
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"I did not say that you were not a gentleman," replied a red-headed fellow with a whisky squint. "I said that you were a liar. Ain't that what I said Jim?" turning to a companion.

"That's what you said," Jim replied.

"Then sir, I ask your pardon," said the gentleman. "I simply misunderstood you, but you can not blame a man for upholding the good name of his family. Well, what are you going to take?"



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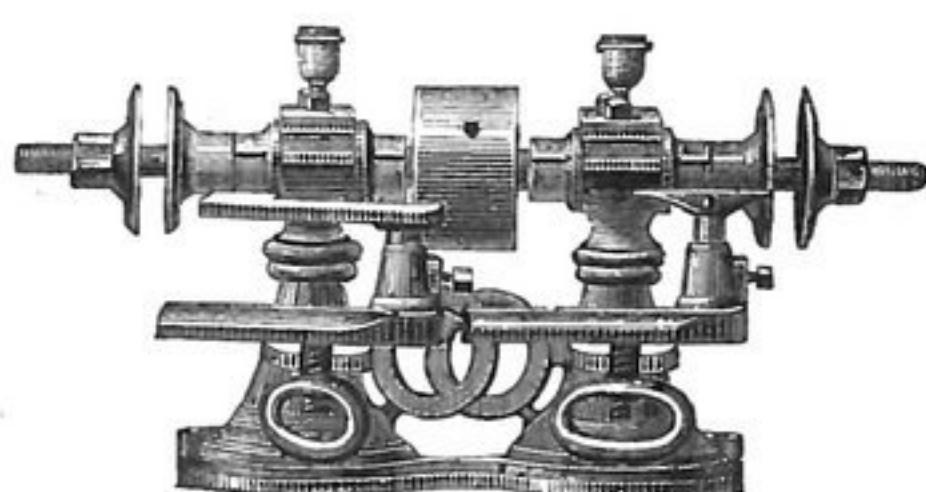
Invaluable to Millers for Repairing and Filling the Joints,

This is a new article of manufacture, and is greatly superior to the preparations now in common use, containing nothing of a poisonous nature. It has the nature and attains the hardness of stone, and assists in grinding. Good Millstones are now in use, composed entirely of this preparation. The Leading Makers are Adopting it to Build Their Millstones. For We cannot open an account for so small a sum, therefore *Cash should be sent with order*, otherwise we shall send C. O. D. by Express, collecting for return of the money. For manufacturers, the Furrows and



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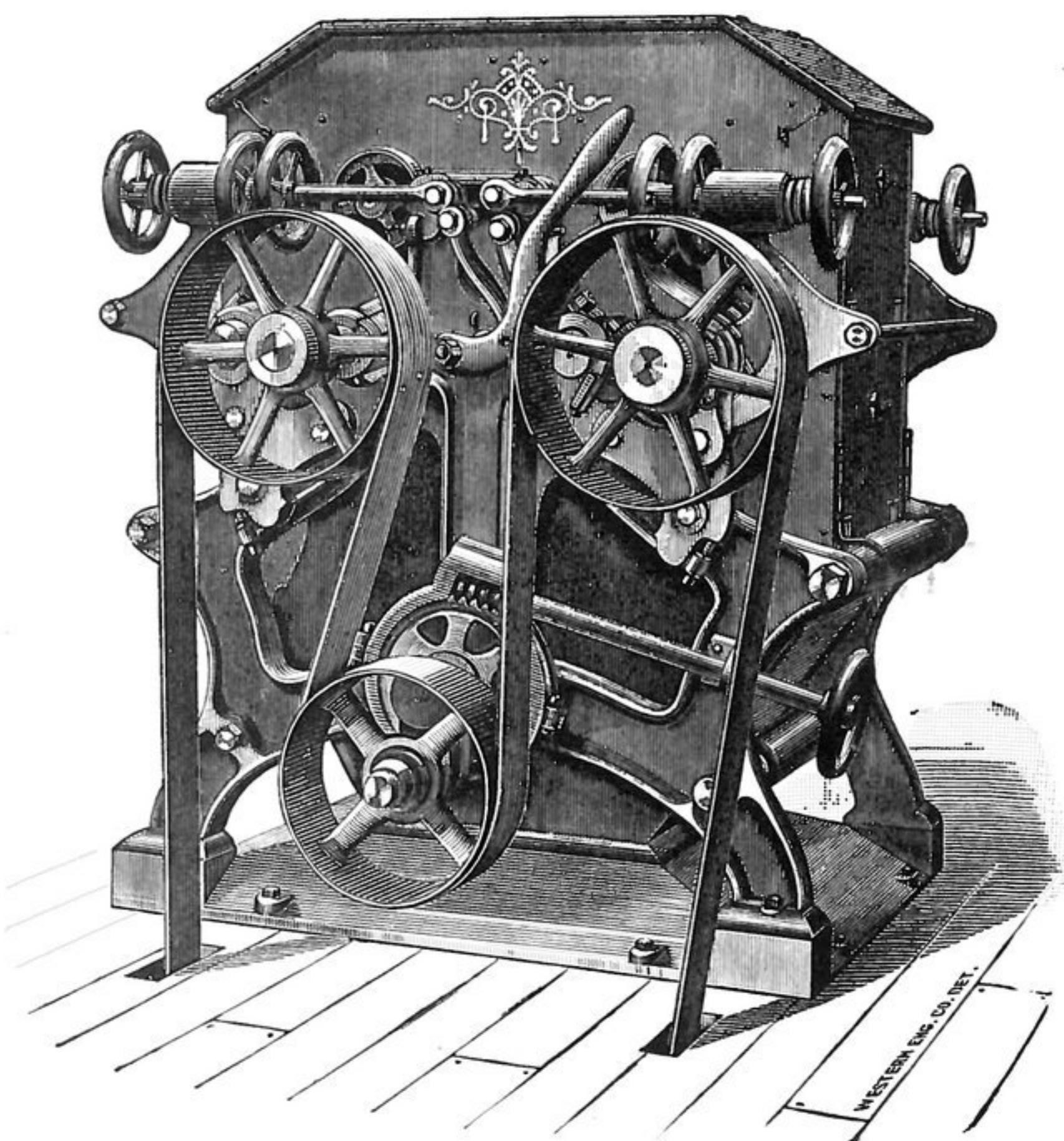
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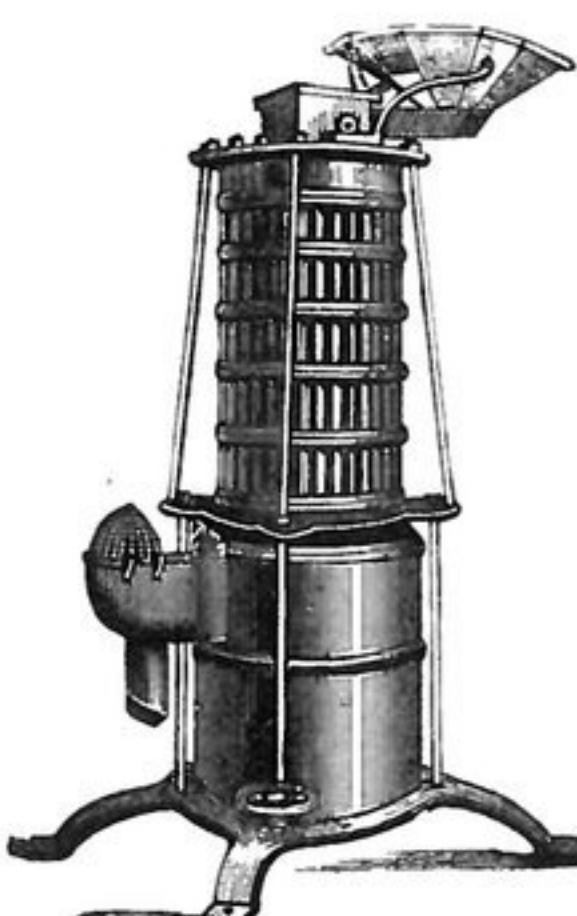
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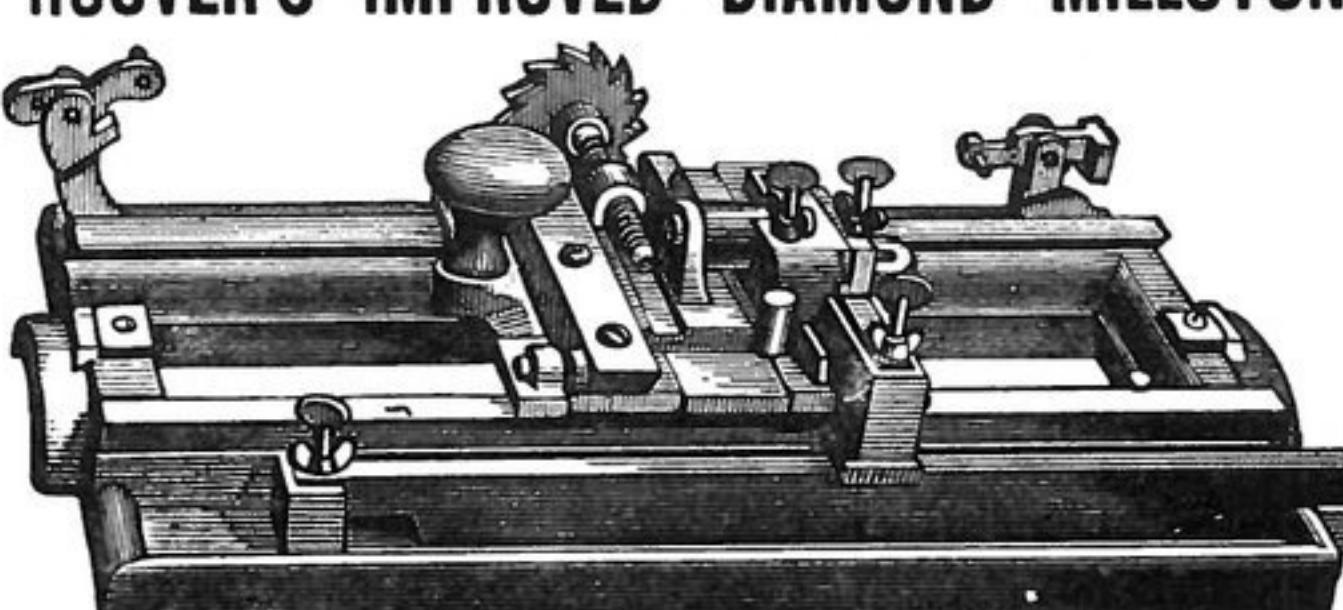
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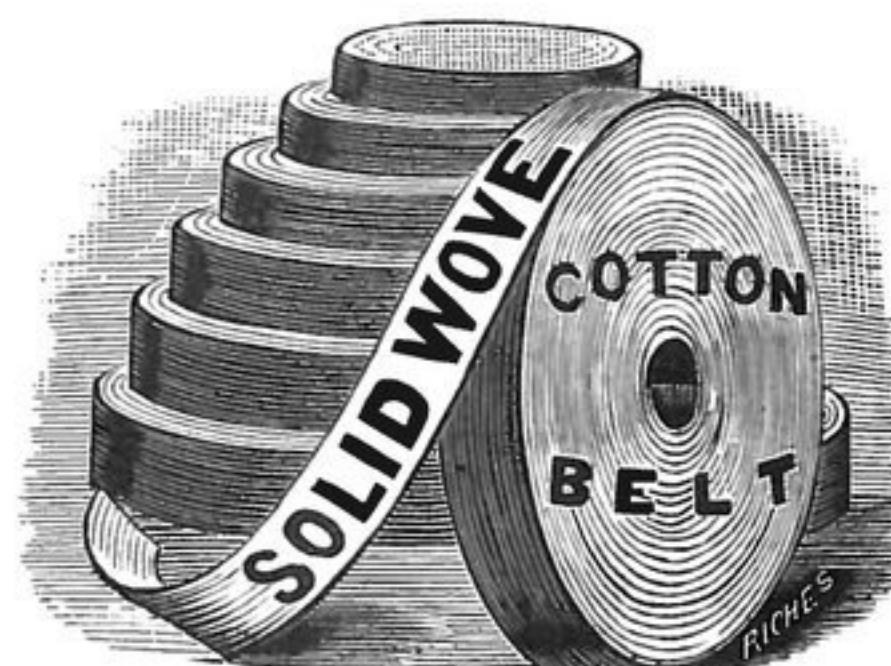


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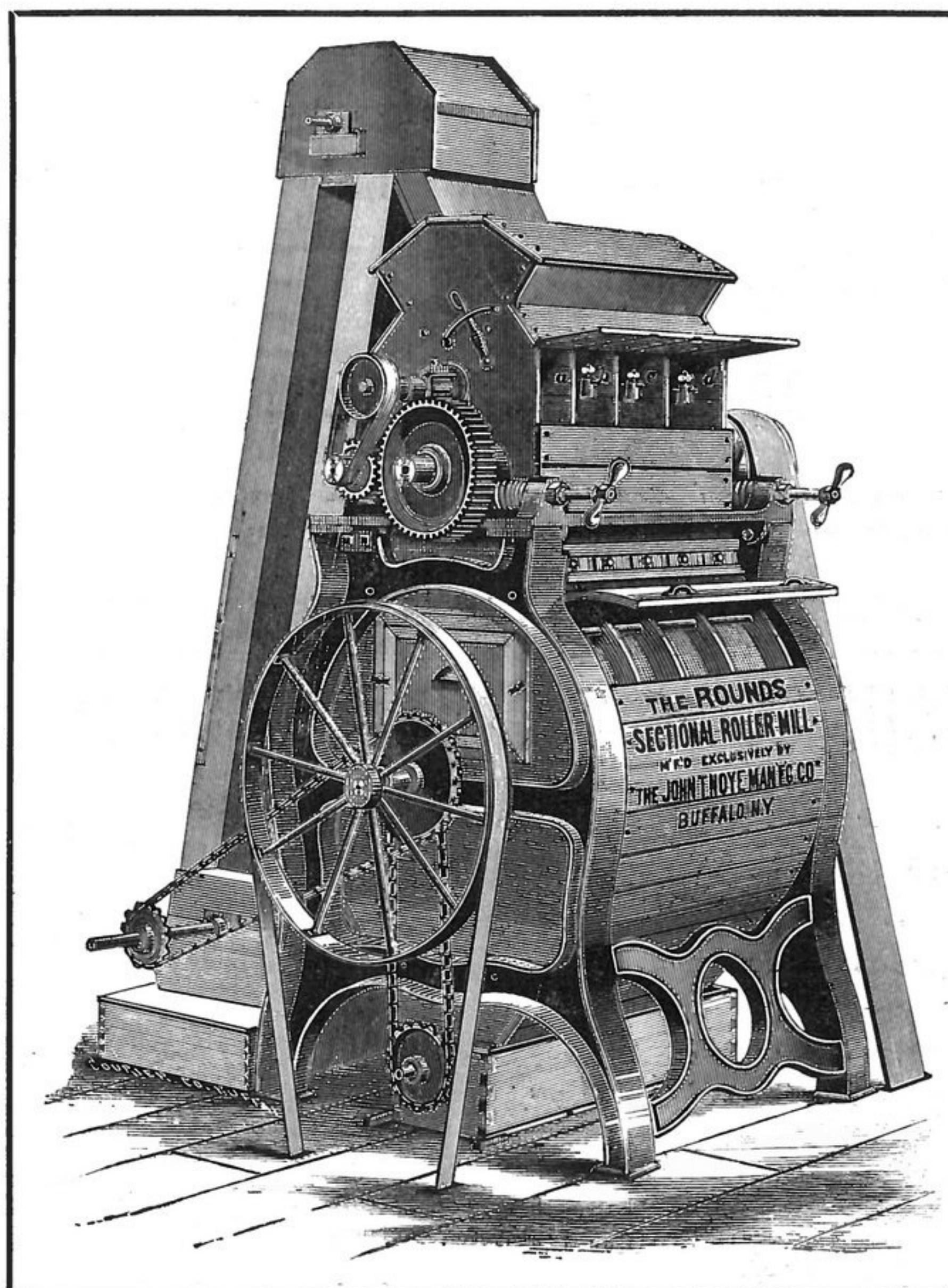
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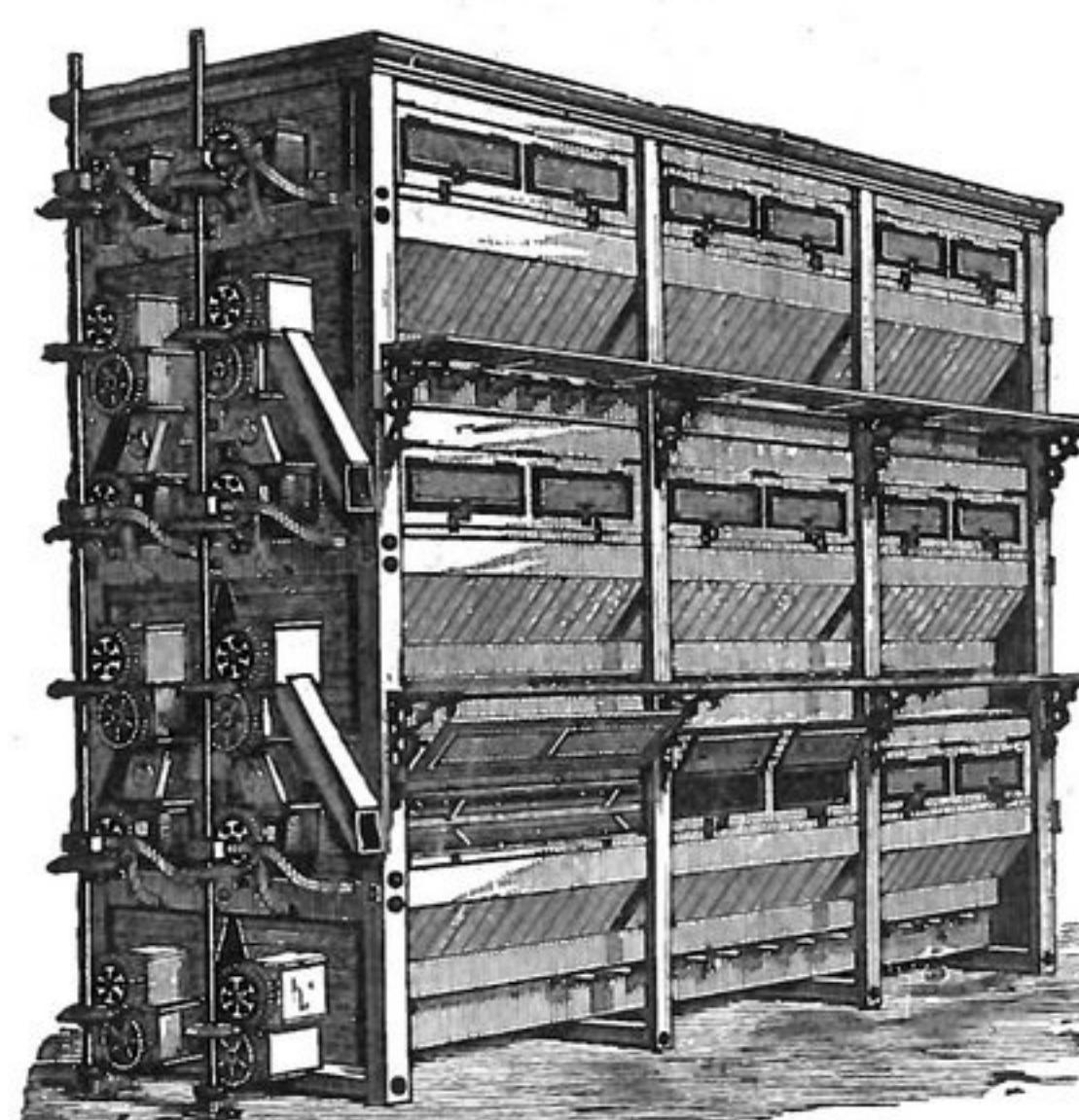


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